

SLV-E70AP/B/ES/IT/NC/UY/VP

RMT-V142C/V146F/V148L

SERVICE MANUAL

101.771.4

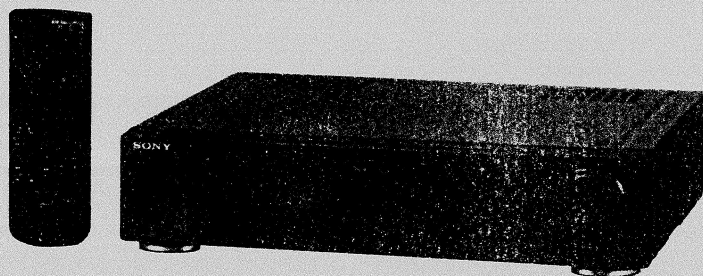


Photo: SLV-E70UY

AEP Model

SLV-E70AP

French Model

SLV-E70B

Spanish Model

SLV-E70ES

Italian Model

SLV-E70IT

North European Model

SLV-E70NC

UK Model

SLV-E70UY

German Model

SLV-E70VP

- Refer to the **SERVICE MANUAL** of VHS MECHANICAL ADJUSTMENT II for MECHANICAL ADJUSTMENT.
(9-972-816-11)



Hi-Fi

SPECIFICATIONS

System

Channel coverage

AP, ES, IT, NC, VP :

PAL :

VHF E2-E12

(A-H: Italian model)

CATV S01-S03, S1-S20

HYPER S21-S41

UHF E21-E69

B :

SECAM:

VHF F2-F10

CATV C1-C23

HYPER C24-C44

UHF F21-E69

PAL :

VHF E2-E12

CATV S01-S03, S1-S20

HYPER S21-S41

UHF E21-E69

UY :

UHF B21-B69

RF output signal

UHF channels 30 - 39

Aerial out

75-ohm asymmetrical aerial socket

Inputs and outputs

EURO-AV

CANAL+ (B)

21-pin

Video input: pin 20

Audio input: pins 2 and 6

Video output: pin 19

Audio output: pins 1 and 3

EURO-AV (LINE IN 2) (UY)

21-pin

Video input: pin 20

Audio input: pins 2 and 6

AUDIO OUT

Phono jack (1)

Rated output level: -7.5 dBs

Load impedance: 47 kilohms

Output impedance: less than

10 kilohms

General

Power requirements

220 - 240 V AC, 50 Hz

Power consumption

25 W

Operating temperature

5°C to 40°C

Storage temperature

-20°C to 60°C

Dimensions

Approx. 430 × 100 × 375 mm
(w/h/d)

including projecting parts and controls

Weight

Approx. 5.2 kg

- Continued on next page -



VIDEO CASSETTE RECORDER
SONY®

Supplied accessories

Remote commander RMT-V142C
(SLV-E70AP/ES/IT/NC/NC/VP: MESECAM)
Remote commander RMT-V146F (SLV-E70B)
Remote commander RMT-V148L (SLV-E70UY)
R6 (size AA) batteries (2)
Aerial cable (1)
Mains lead (1)
RF screwdriver (1)

Design and specifications are subject to
change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following
safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SERVICE NOTE

1. RETURNING PINCH ROLLER, GUIDE ROLLER AND ELEVATOR CAM TO STOP CONDITION

- 1) Remove the bottom panel.
- 2) Turn the worm gear **A** of the cam motor, located at lower of the MD, to the arrow direction **B** by finger.

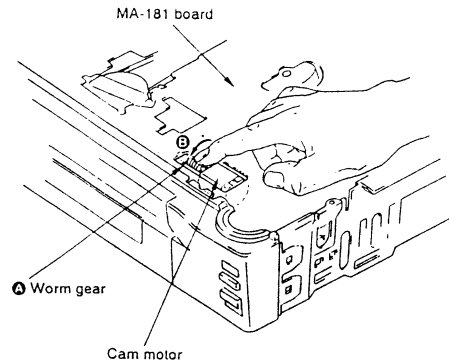


Fig. 1.

2. WINDING TAPE TO CASSETTE HALF

Turn the flywheel **A** of the capstan motor to the arrow direction **B** by finger, then the cassette tape will be wound to the cassette half.

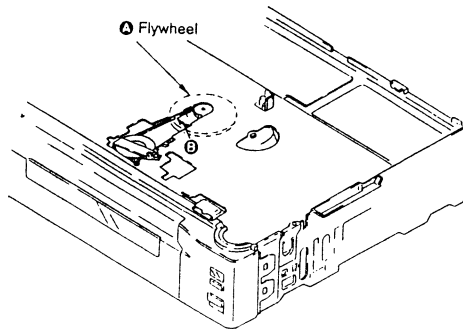


Fig. 2.

3. TAKING OUT CASSETTE WHEN UNIT IS DEFECTIVE WITH CASSETTE IN

- 1) Remove the upper case.
- 2) Turn the worm gear **A** of the FL cassette compartment motor to the arrow direction **B** by finger.

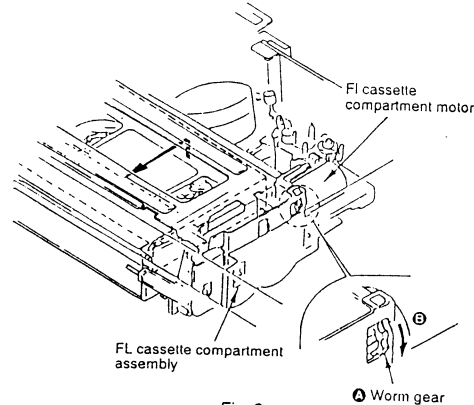


Fig. 3.

Note: When performing 1. to 3., be careful not to clog and damage the cassette tape.

4. UPPER DRUM REPLACEMENT

4-1. Removal of Upper Drum

- 1) Remove the screw **1** (+P3 × 5) and take out the grounding shaft **2**. (See Fig. 4.)
- 2) Completely remove the rotary upper drum board and desolder the soldering indicated by the arrows.
- 3) Remove two screw **3** (PSW3 × 8) and take out the rotary upper drum in the arrow direction **A**. (See Fig. 5.)
If it difficult, remove by shaking the rotary upper drum gradually.

Note: If the drum can not be removed, check wheater the solders have been removed or not again.

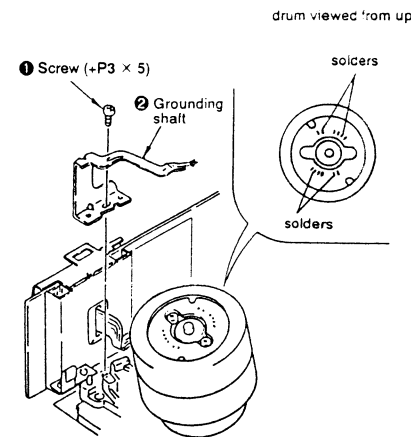


Fig. 4.

4-2. Mounting Upper Drum

- 1) When inserting the rotary drum into the lower drum, be careful not to blur the contacting surface with fingerprint or the like.
- 2) Mount the rotaly upper drum board by aligning marked **➡** with marked **➡** of rotary transformer board (lower drum) so that the screw holes of both upper and lower drums match. (See Fig. 5.)
- 3) If it is difficult, mount the upper drum by shaking it gradually.

Note: Be careful not to damage the head. Make sure that the upper drum is tightly inserted.

- 4) Tighten two screws **3** (PSW3 × 8). (See Fig. 5.)

Note: Temporary tighten two screws. After making sure that upper drum is tightly inserted, tighten the screws.

- 5) Solder points on the board of the rotary upper drum.
- 6) Fix the grounding shaft **2** using the screw **1** (+P3 × 5) so that the protrusion of grounding shaft end contacts the center of the drum shaft.

Note: When attaching the grounding shaft **2**, be careful not to apply force to the spring section of it.

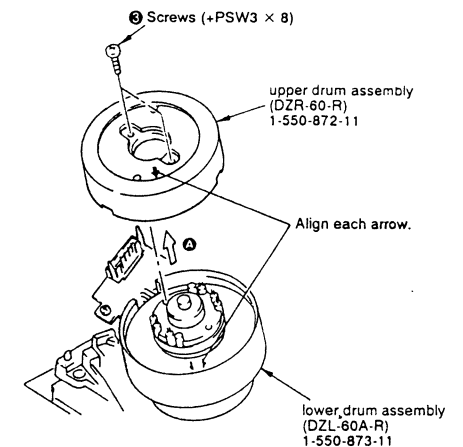
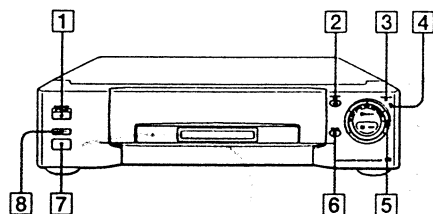


Fig. 5.

Index to parts and controls

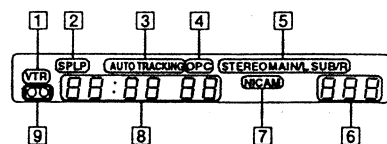
Refer to the pages indicated in () for details.

Front panel, with cover closed



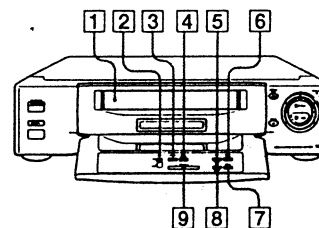
- 1 ON/STANDBY switch/indicator
- 2 ◀◀ HI-SPEED REW button (16)
- 3 TIMER REC (recording) indicator (19)
- 4 REC (recording) indicator
- 5 DUAL MODE SHUTTLE ring (16)
- 6 || PAUSE button (16)
- 7 Remote sensor (6)
- 8 EJECT button (16)

Display window



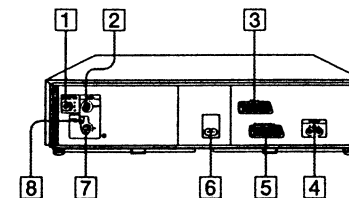
- 1 VTR indicator (7)
- 2 Tape speed indicators (19)
- 3 AUTO TRACKING indicator (31)
- 4 OPC indicator (31)
- 5 Sound indicators (20)
- 6 Line/Programme position indicator
- 7 NICAM indicator (20)
- 8 Linear time counter/Clock (11, 17)
- 9 Tape indicator

Front panel, with cover opened



- 1 Tape compartment
- 2 EDIT switch (35)
- 3 TV/VTR button (7)
- 4 INPUT SELECT button (8)
- 5 OPC button (31)
- 6 QUICK TIMER button (19)
- 7 ● REC button (18)
- 8 TIMER REC ON/OFF button (19)
- 9 PROGRAM buttons (8)

Rear panel



- 1 RF CHANNEL screw (8)
- 2 AERIAL OUT connector (7)
- 3 EURO-AV (LINE IN 2) connector (7)
- 4 AUDIO OUT jacks (7)
- 5 EURO-AV (LINE 1) connector (7)
- 6 AC IN connector (7)
- 7 AERIAL IN connector (7)
- 8 LOCAL/DX switch (15)

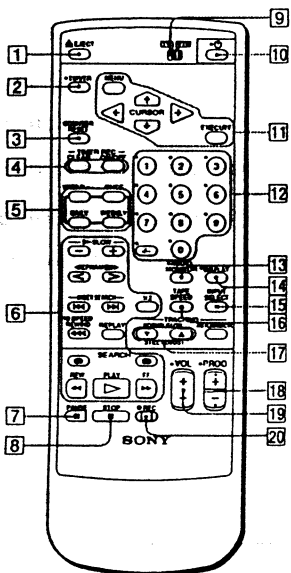
SECTION 1 GENERAL

SLV-E70AP/B/ES/IT/NC/UY/VP

This section is extracted from SLV-E70UY instruction manual.

Index to parts and controls (continued)

Remote commander

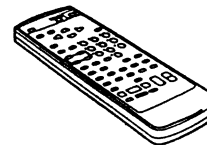


- 1 EJECT button (16)
- 2 TV/VTR button (7)
- 3 COUNTER RESET button (17)
- 4 TIMER REC buttons
CLEAR button (27)
ON/OFF button (19)
- 5 VIDEO Plus+ buttons (25)
VIDEO Plus+ button
ONCE button
DAILY button
WEEKLY button
- 6 Tape transport buttons
▶ SLOW buttons (29)
REPLAY button (30)
◀ II/II ▶ FRAME buttons (29)
◀◀◀ HI-SPEED REWIND button (16)
◀◀/▶▶ INDEX SEARCH buttons (32)
⊗/⊙ SEARCH buttons (16)
x2 button (29)
◀◀ REW button (16)
▶ PLAY button (16)
▶▶ FF button (16)
- 7 PAUSE button (16)
- 8 STOP button (16)
- 9 remote control switch (6)
- 10 (on/standby) button (8)
- 11 Menu operation buttons (7)
MENU button
CURSOR ↑/↓/←/→ buttons
EXECUTE button
- 12 Programme number buttons and -/+ button (10)
- 13 AUDIO MONITOR button (17)
- 14 DISPLAY button (17)
- 15 INPUT SELECT button (8)
- 16 TAPE SPEED button (18)
- 17 TRACKING buttons (31)
▼/▲ NORMAL/SLOW
STILL ADJUST buttons
AUTO/MANUAL button
- 18 PROG (programme) button (8)
- 19 VOL (volume) button
- 20 REC (recording) button (18)

Step 1 Unpacking

Check that you have the following items:

- Remote commander



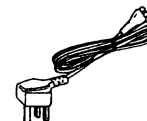
- R6 (size AA) batteries



- Aerial cable



- Mains lead

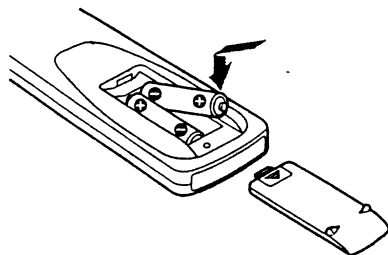


- RF screwdriver



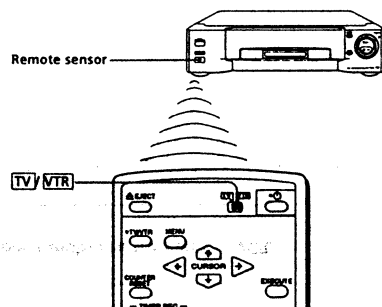
Step 2 Setting up the remote commander

Insert two R6 (size AA) batteries by matching the + and - on the batteries to the diagram inside the battery compartment.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your TV.

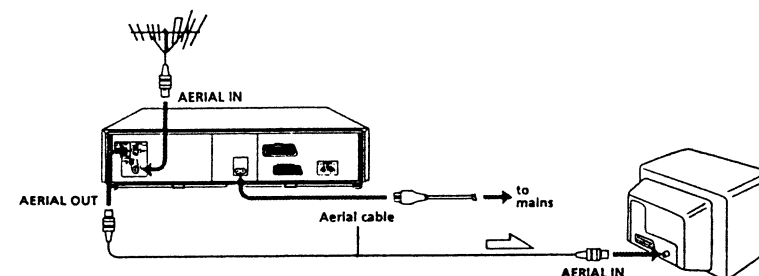


To operate	Set TV/VTR to
the VCR	VTR and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

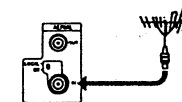
Notes

- With normal use, the batteries should last for approximately three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one.
- Do not use different types of batteries.

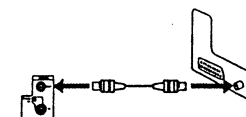
Step 3 Connecting the VCR



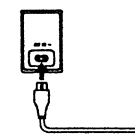
- 1 Disconnect the aerial input cable from your TV and connect it to AERIAL IN of the VCR.



- 2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.



- 3 Connect AC IN of the VCR and the mains supply using the mains lead. You've completed the basic hookup to watch and record TV programmes.

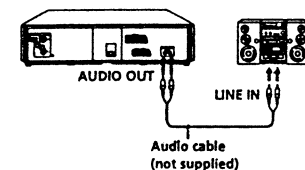
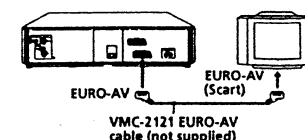


Additional connections

To a TV that has a EURO-AV (Scart) connector

This additional connection can improve picture and sound quality.

- 1 Connect to the TV as shown on the right.
- 2 Press TV/VTR to light "VTR" in the display window.
- 3 Set RF MODULATOR to OFF.
 - 1) Press MENU.
 - 2) Press CURSOR ↑/↓ to select SET UP MENU, then press EXECUTE.
 - 3) Press CURSOR ↑/↓/←/→ to select RF MODULATOR and set to OFF. (See page 33.)

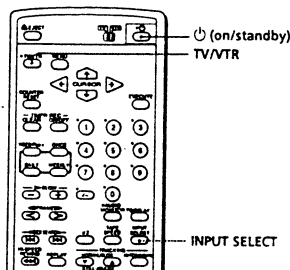


To a stereo system

You can improve sound quality by connection to a stereo system as shown on the right.

Step 4 Tuning the TV to your VCR

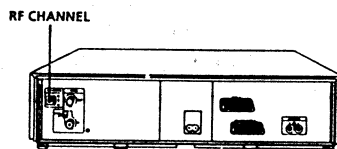
If you have connected the VCR to your TV using the EURO-AV cable, skip this step.



- 1 Press (on/standby) to turn on the VCR.
- 2 Press TV/VTR to light "VTR" in the display window.
- 3 Press INPUT SELECT until "L2" appears in the display window.
- 4 Turn on your TV and select a programme position for video playback.
- 5 Tune the TV between UHF channels 30 and 39 so that a grey screen appears on the TV screen.
Refer to your TV manual for tuning instructions.
- 6 Press INPUT SELECT until "L2" disappears and a programme number appears instead.
- 7 Press PROG +/- to check to see if the TV screen changes to a different programme.
You have now tuned your TV to the VCR. Whenever you play a tape, set the TV to the programme position selected in step 4 above.

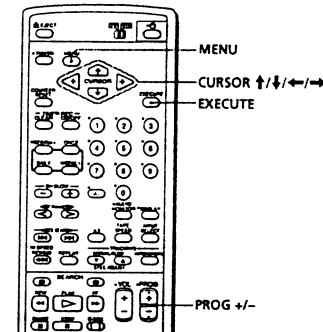
To obtain a clear grey screen

The grey screen may not appear clearly in step 5 above. In this case, turn the RF CHANNEL screw at the rear of the VCR with the supplied RF screwdriver, to a position where the TV clearly displays a grey screen.



Step 5 Tuning the VCR to TV channels

Now you can set your VCR to receive broadcast channels using the on-screen display.

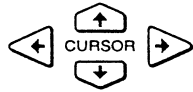


- 1 Press MENU.
The following menu appears on the TV screen.
- 2 Press CURSOR to move the cursor (I) to TUNER PRESET, then press EXECUTE.
- 3 Press CURSOR to move the cursor (I) to CHANNEL SET.
- 4 Press PROG +/- to select the programme position.

(continued)

Step 5 Tuning the VCR to TV channels (continued)

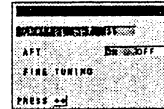
5



Press **CURSOR →** to start tuning.

The VCR starts searching for a channel and displays the first one it finds on the TV screen. Press **CURSOR ←/→** repeatedly until the channel you want is displayed.

If you know the number of the channel you want, press the number buttons. For example, for channel 43, first press "4" and then press "3."



6

To allocate another channel to another programme position, repeat steps 4 and 5.

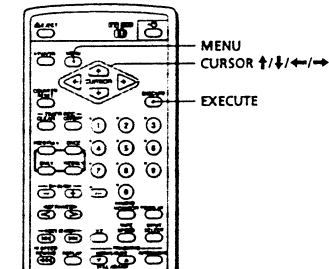
7



Press **EXECUTE** to store all the allocated channels.

Step 6 Setting the clock

You must set the time and date on the remote commander to be able to use the timer recording features properly.

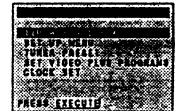


1

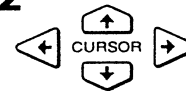


Press **MENU**.

The main MENU appears on the TV screen.

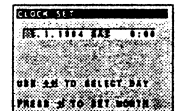


2

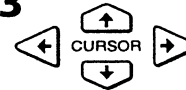


Press **CURSOR ↑/↓** to move the cursor (b) to **CLOCK SET**, then press **EXECUTE**.

The **CLOCK SET** menu appears on the TV screen and the day is highlighted.

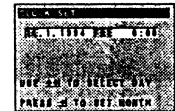


3

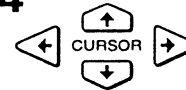


Set the day using **CURSOR ↑/↓**.

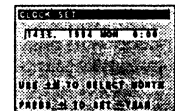
The day of the week is set automatically.



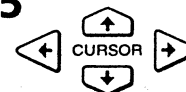
4



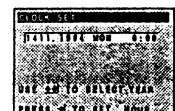
Press **CURSOR →** to highlight the month. Set the month using **CURSOR ↑/↓**.



5



Press **CURSOR →** to highlight the year. Set the year using **CURSOR ↑/↓**.



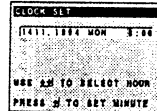
(continued)

Step 6 Setting the clock (continued)

6



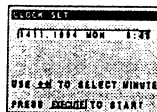
Press CURSOR → to highlight the hour.
Set the hour using CURSOR ↑/↓.



7



Press CURSOR → to highlight the minutes.
Set the minutes using CURSOR ↑/↓.



8



Press EXECUTE to start the clock.

Note

- The menu disappears automatically if you don't proceed for more than one minute.

Step 7 Setting up VIDEO Plus+

VIDEO Plus+ is a feature in Sony VCRs that simplifies the task of programming the VCR to make timer recordings.

How VIDEO Plus+ works

Whenever you want to record a TV programme, all you need to do is look up the programme's "PlusCode," a number assigned to each programme that's published in TV guide magazines. Then, just enter the PlusCode of the programme you want and the VCR is automatically programmed to record that show. It's that simple. With VIDEO Plus+, you no longer have to go through a lengthy and often repetitive procedure when you set start and stop times, channel numbers, and dates. All this information is automatically sent to your VCR when you enter the programme's PlusCode.

How to set up your VCR

Before using VIDEO Plus+ to make timer recordings, check whether the programme position number assigned to each TV channel matches those you have preset on the VCR.

The initial assignment is:

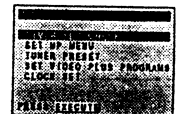
TV channel	BBC 1	BBC 2	ITV	CH 4	CH 5
Programme position	1	2	3	4	5

For example, if ITV is preset to programme position 7 on your VCR, you must change the initial assignment using the following procedure. For programme positions whose numbers are the same, you can skip this procedure.

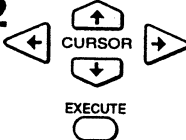
1



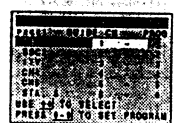
Press MENU.
The main MENU appears on the TV screen.



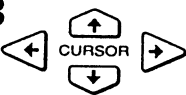
2



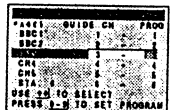
Press CURSOR ↑/↓ to move the cursor (I) to SET VIDEO PLUS PROGRAMS, then press EXECUTE.
The SET VIDEO PLUS PROGRAMS menu appears.



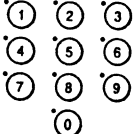
3



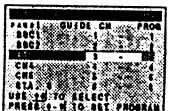
Press CURSOR ↑/↓ to move the cursor (I) to the TV channel whose programme position number you want to change.
The programme position is highlighted.



4



Enter the programme position number that you have preset on your VCR.
To change other initial settings, repeat steps 3 and 4.



5



When you've finished, press EXECUTE to exit.

Step 7 Setting up VIDEO Plus+ (continued)

How to preset satellite channels

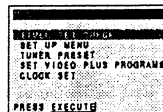
If you connect the VCR to a satellite tuner, you must preset the satellite channels to make timer settings for satellite programmes using VIDEO Plus+. Once you have made the settings, you don't need to modify them unless you change the VCR-satellite tuner connection. However, if you have connected more than one satellite tuner to the VCR via the AERIAL IN connector and the EURO-AV (Scart) connector, you must change the settings each time you change the tuner on which you want to receive a satellite programme.

1

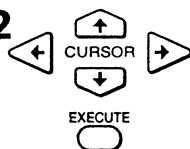


Press MENU.

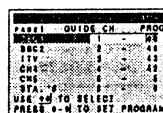
The main MENU appears on the TV screen.



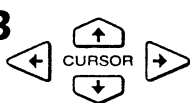
2



Press CURSOR $\uparrow/\downarrow$ to move the cursor (I) to SET VIDEO PLUS PROGRAMS, then press EXECUTE.
The SET VIDEO PLUS PROGRAMS menu appears.



3

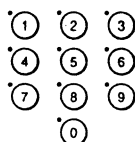


Press CURSOR $\uparrow/\downarrow$ to move the cursor (I) to SATELLITE.
The SET VIDEO PLUS PROGRAMS menu consists of three on-screen pages. Press and hold CURSOR $\downarrow$ to move the cursor (I) to the third page, and select SATELLITE.

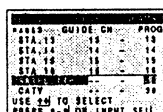


4

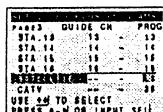
Enter the programme position number for satellite broadcasts:



• **If you have connected the satellite tuner via the AERIAL IN jack, enter the programme position number.**
Use the number that is used for viewing satellite programmes on the VCR. (If you use programme position 50 to view satellite programmes on the VCR, enter "5" and then "0".)



• **If you have connected the satellite tuner via the EURO-AV (Scart) LINE 1/LINE 2 connector, press INPUT SELECT.**
If you have connected the satellite tuner via the EURO-AV (Scart) connector, select L1 or L2.

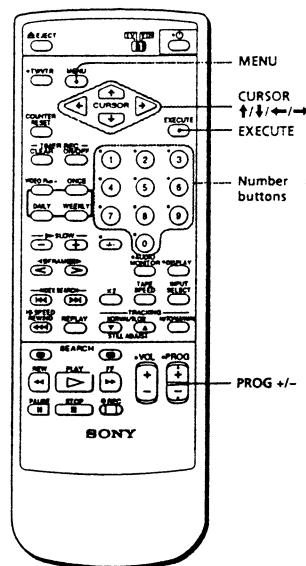


5



When you've finished, press EXECUTE to exit.

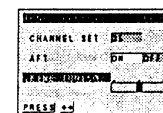
Additional tuning instructions



If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture is not clear, you may also use the manual tuning function.

- 1 Press PROG +/- to select the programme number for which you cannot obtain a clear picture.
- 2 Press MENU, then select TUNER PRESET and press EXECUTE.
- 3 Select FINE TUNING. The fine tuning meter appears.



- 4 Press CURSOR $\leftarrow/\rightarrow$ to get a clearer picture, then press EXECUTE. Note that the AFT (Auto Fine Tuning) setting switches to OFF.

If the TV signal is too strong

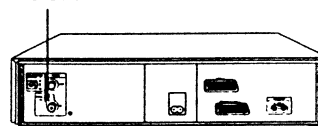
Set the LOCAL/DX switch on the rear of the VCR to LOCAL.

Disabling unwanted programme positions

After tuning the TV channels, you can disable unused programme positions. Positions that are disabled will be skipped later when you press the PROG +/- buttons.

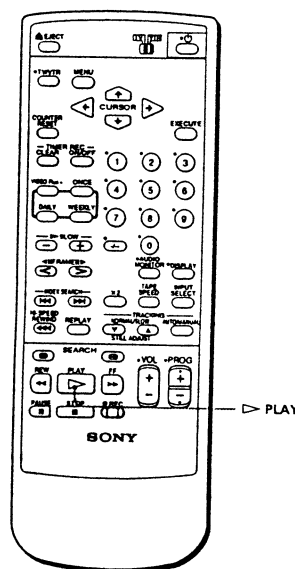
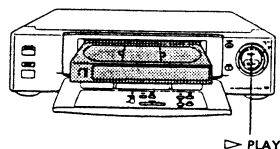
- 1 Press MENU, then select TUNER PRESET and press EXECUTE.
- 2 Press PROG +/- until the programme position you want to disable appears beside "PROG" on the TV screen.
- 3 Press number button "0" twice to display the number "0" beside CHANNEL SET.
- 4 Repeat steps 2 and 3 for other positions you want to disable.
- 5 Press EXECUTE.

LOCAL/DX



Basic Operations

Playing a tape



This section shows you how to play back a video tape.

1 Turn on your TV and tune in to the VCR:

- If the TV is connected to the VCR using the EURO-AV cable, set the TV to video input.
- If the TV is connected to the VCR using only the aerial cable, set the TV to the programme position for the VCR.

2 Open the drop down panel and insert a tape.

The VCR turns on automatically. The tape starts playing automatically if its safety tab has been removed. (See page 21.)

3 Press ▷ PLAY to start playing.

When the tape reaches the end, the VCR automatically rewinds it to the beginning. (The power remains on.)

Additional tasks

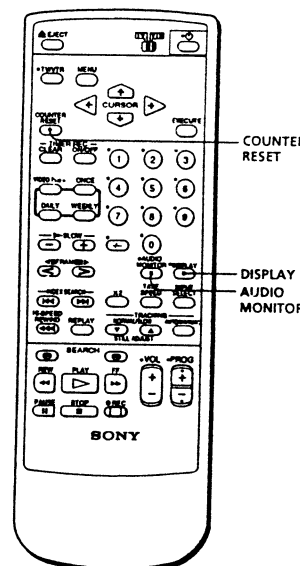
To	Press
Stop play	■ STOP
Pause play	PAUSE
Resume play after pause	PAUSE or ▷ PLAY
Search forward	On the VCR, turn the DUAL MODE SHUTTLE (DMS) ring to ⊕ during playback. On the remote commander, press ⊕ SEARCH during playback.
Search backward	On the VCR, turn the DMS ring to ⊖ during playback. On the remote commander, press ⊖ SEARCH during playback.
Fast-forward the tape	On the VCR, turn the DMS ring to ►► during stop. On the remote commander, press ►► FF.
Rewind the tape	On the VCR, turn the DMS ring to ◄◄ during stop. On the remote commander, press ◄◄ REW.
Rewind the tape at high speed	◄◄◄ HI-SPEED REWIND
Eject the tape	⊕ EJECT

Notes

- When a tape is reinserted, the counter returns to "0H00M00S."
- The counter will not work on tape portions with no recording.

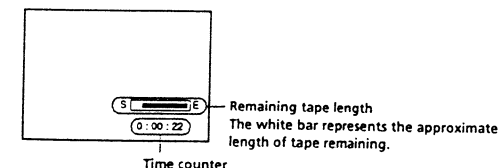
Notes

- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- To play a tape in stereo, you must use the EURO-AV connection or a LINE or AUDIO OUT connection.
- If AUDIO MIX in the SET UP MENU is set to ON, the AUDIO MONITOR button doesn't work.



Displaying the remaining tape length and time counter

Press DISPLAY to turn the display on or off.



Using the time counter

At the point on a tape that you want to find later, press COUNTER RESET to reset the counter to "0H00M00S." When you rewind or advance the tape to this point, refer to the counter.

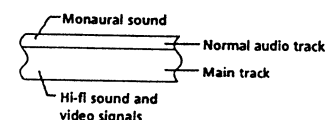
Playing stereo and bilingual programmes

Press AUDIO MONITOR to select the desired sound. Each press of the button changes the display on the VCR and TV screen.

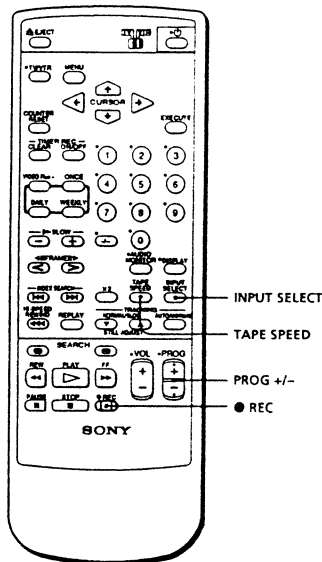
To listen to a		Press AUDIO MONITOR until	
Stereo tape	Bilingual tape	The TV screen shows	The display window indicator shows
Stereo	Main and sub sounds	"STEREO"	"STEREO"
Left channel	Main sound	"Lch"	"MAIN/L"
Right channel	Sub sound	"Rch"	"SUB/R"
Sound on normal audio track (monaural)	Sound on normal audio track	No indication	No indication

How sound is recorded on a video tape

This VCR records sound onto two different tracks. High-fidelity sound (usually stereo) is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.



Recording TV programmes



Note

- If you insert a cassette with its safety tab removed, the VCR starts playing. To record on this tape, cover the tab hole on the cassette, or the VCR will eject it when you press ● REC.

Tip

- To select programme positions, you can also use the number buttons on the remote commander. For two-digit numbers, press the +/- (ten's digit) button followed by the number buttons.

This section shows you how to record TV programmes in the most basic way: manual recording. With manual recording, you start the VCR recording when the programme begins, then stop it when the programme ends. The VCR also provides the following ways of recording:

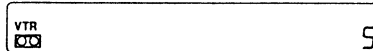
- Manually start recording, then stop it automatically—"Recording using the quick timer" (page 19)
- Automatically start and stop recording—"Recording TV programmes using the timer" (page 22)
- Automatically start and stop recording by simply entering the "PlusCode" number—"Recording TV programmes using VIDEO Plus+" (page 25)

1 Turn on your TV and tune in to the VCR:

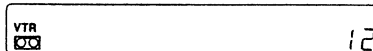
- If the TV is connected to the VCR using the EURO-AV cable, set the TV to video input.
- If the TV is connected to the VCR using only the aerial cable, set the TV to the programme position for the VCR.

2 Open the drop down panel and insert a tape with its safety tab in place.

3 Press INPUT SELECT until a programme position appears in the VCR's display window.

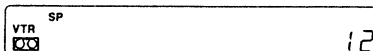


4 Select the desired programme position by pressing PROG +/-.



5 Select the tape speed, SP (standard play) or LP (long play), by pressing TAPE SPEED.

See "To select tape speeds" on the next page.



6 Start recording by pressing ● REC.

When the tape reaches the end, the VCR automatically rewinds it to the beginning.

Tips

- To cut out an unwanted scene while recording, press II PAUSE, turn the DUAL MODE SHUTTLE ring on the VCR to rewind the tape to the beginning of the unwanted scene, then press II PAUSE to resume recording.
- The display appears on the TV screen indicating information about the tape, but the information will not be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV. When using a decoder, make sure to leave it on.

To stop recording

Press ■ STOP.

To select tape speeds

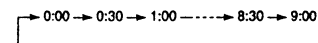
When recording, select either SP or LP. LP provides recording time twice as long as SP. However, SP provides better picture quality. You can mix SP and LP on the same tape. When playing back, the VCR automatically detects the tape speed. See the table below for the maximum recording/playback time in each speed.

Tape type	Maximum recording/playback time	
	SP	LP
E-240	4 hrs.	8 hrs.
E-180	3 hrs.	6 hrs.
E-120	2 hrs.	4 hrs.
E-60	1 hr.	2 hrs.

Recording using the quick timer

The quick timer enables you to record for a specified period of time in intervals of 30 minutes. Once you specify the recording time, the VCR automatically stops recording. Before you begin, check that the clock is set correctly.

After you start recording, press QUICK TIMER until the desired duration appears in the display window. The TIMER REC indicator on the VCR lights up. Each press increases the recording duration in increments of 30 minutes as shown below.



The recording duration decreases minute by minute to 0:00, then the VCR turns off automatically.

To stop recording

To stop quick-timer recording while the VCR is recording a programme, press TIMER REC ON/OFF to turn off the TIMER REC indicator on the VCR.

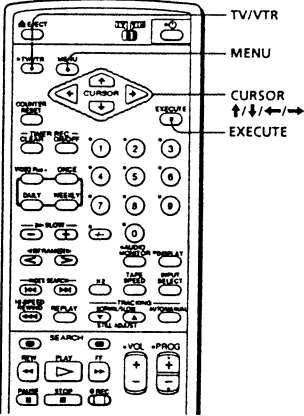
To extend the recording duration while recording

Press QUICK TIMER until the desired duration appears in the display window.

Recording TV programmes (continued)

Note

- If you are using the VCR to record while watching another programme, you cannot use a satellite tuner.



Note

- If you set HI-FI AUDIO to STD, the standard sound is recorded on both the hi-fi and normal audio tracks. (You cannot select the listening sound using AUDIO MONITOR.)

Watching a TV programme while recording another

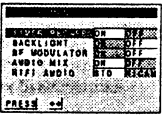
You can watch a TV programme and record another at the same time.

- Press TV/VTR on the top right of the remote commander to turn off the VTR indicator in the display window.
- Select the desired programme position on the TV.

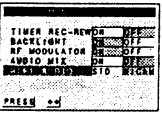
Recording stereo and bilingual programmes: in NICAM system

This VCR receives and records stereo and bilingual programmes based on the NICAM system. When NICAM broadcasts are received, the NICAM indicator appears in the display window; when stereo broadcasts are received, the STEREO indicator appears; when bilingual broadcasts are received, "MAIN/L" appears in the display window.

- Press MENU and select SET UP MENU.



- Set HI-FI AUDIO to NICAM by pressing CURSOR $\uparrow/\downarrow/\leftarrow/\rightarrow$.



- Press EXECUTE to store the setting.

Using the NICAM setting, NICAM broadcasts are recorded as in the following table.

Track	Sound recorded	
	Stereo	Bilingual
Hi-fi audio Left channel	Left channel	Main
Hi-fi audio Right channel	Right channel	Sub
Normal audio (monaural)	Standard	Standard

To monitor stereo and bilingual programmes while recording
Press AUDIO MONITOR to select the desired sound.

Stereo programmes

To listen to	Press AUDIO MONITOR until	
	The TV screen shows	The display window indicator shows
Stereo sound	"STEREO"	"STEREO"
Standard sound	No indication	No indication

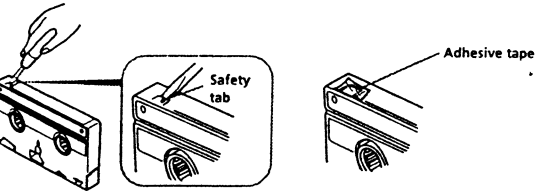
Bilingual programmes

To listen to	Press AUDIO MONITOR until	
	The TV screen shows	The display window indicator shows
Main sound	"MAIN"	"MAIN/L"
Sub sound	"SUB"	"SUB/R"
Main and sub sounds	"MAIN/SUB"	"MAIN/L, SUB/R"
Standard sound	No indication	No indication

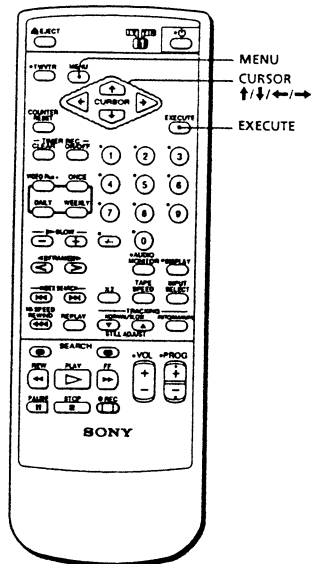
Saving a recording

Video tapes have a safety tab to protect against accidental recording. To prevent accidental erasure of a recording, break off the safety tab with a screwdriver or other tool. A tape with its safety tab removed ejects if you try to record on it.

To record on a tape with its safety tab removed, cover the tab hole with adhesive tape.



Recording TV programmes using the timer



This section shows you how to let the VCR automatically start and stop recording TV programmes. You can preset up to eight programmes within a one month time frame.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR.

1 Press MENU and select TIMER SET/CHECK, then press EXECUTE.

A short beep alerts you if the clock needs to be set.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

2 Set the date to start recording:

- 1 Press CURSOR →. Make sure today's date is highlighted. If it isn't, reset the clock to the correct time.
- 2 Press CURSOR ↑ to set the date and month. The day of the week is set automatically.

To record the same programme every day or the same day once a week, see "Daily/weekly recording" on page 24.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

3 Set the time to start recording:

- 1 Press CURSOR → to highlight the hour under "START," then press CURSOR ↑/↓ to set the hour.
- 2 Press CURSOR → to highlight the minutes under "START," then press CURSOR ↑/↓ to set the minutes.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

4 Press CURSOR →, then set the time to stop recording in the same way.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

Tips

- To set the channel, you can also use the PROG +/- or number buttons.
- To record video sources from LINE IN 1 or 2 jacks, press INPUT SELECT to display "L1" or "L2" in the "PROG" position.
- To set the recording tape speed, you can also use TAPE SPEED.
- To change or correct a setting before confirming it, press CURSOR → to highlight the item you want to change and reset it.

Notes

- If the power is interrupted for more than one hour while the VCR is standing by for recording, the timer settings are cleared. Reset the timer.

- 5 Press CURSOR →, then press CURSOR ↑/↓ to select the programme you want to record. Only the channels preset in the VCR will appear.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

- 6 Press CURSOR →, then press CURSOR ↑/↓ to select the tape speed, SP (standard play) or LP (long play). See "To select tape speeds" on page 19.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

- 7 To confirm your programme, press CURSOR →. All the settings stop being highlighted and the cursor (I) appears in the leftmost column. To preset another timer setting, move the cursor to the next line using CURSOR ↓ and repeat steps 2 to 7.

DATE	START	STOP	PROG
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0
11-11-11	1:00	1:00	0

- 8 After making the desired timer settings, press EXECUTE.

- 9 Press TIMER REC ON/OFF. The TIMER REC indicator on the VCR lights up and the VCR turns off and stands by for recording. The VCR automatically turns on and starts recording at the preset start time, and turns off at the preset stop time.

To stop recording

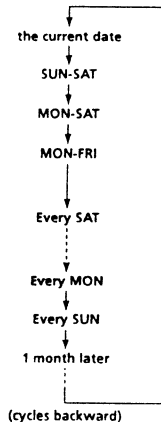
To stop while the VCR is recording a program, press TIMER REC ON/OFF to turn off the TIMER REC indicator on the VCR.

To use the VCR while recording

You can do the following tasks during timer recording.

To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU, and select TIMER SET/CHECK
Watch another TV programme	TV/VTR (See "Watching a TV programme while recording another" on page 20.)

Recording TV programmes using the timer (continued)



Using the VCR before timer recording begins

Press **TIMER REC ON/OFF** to turn off the **TIMER REC** indicator on the VCR, then press **⏻** (on/standby). The VCR is ready for use.

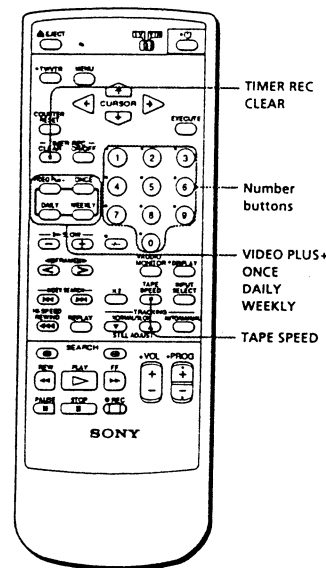
After using the VCR, press **TIMER REC ON/OFF** again to turn on the **TIMER REC** indicator on the VCR. Remember to reset the VCR to stand by for recording before the time you've set the VCR to start recording, or the timer setting will be cancelled.

Daily/weekly recording

Daily recording records the same programme every day of the week; weekly recording records the same programme on the same day, every week.

When you set the date to start recording in step 2 of "Recording TV programmes using the timer," press **CURSOR ↓** until the desired day appears. Each time you press the button, the indication changes as shown on the left.

Recording TV programmes using VIDEO Plus+



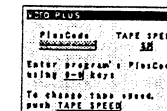
This section shows you another way of timer recording: recording using **VIDEO Plus+**. This allows you to record TV programmes more easily. Just enter the programme's "PlusCode," and the VCR will automatically record the programme. You can preset up to eight programmes within a one month time frame.

Before you start...

- Check that the clock is set correctly.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and tune in to the VCR.

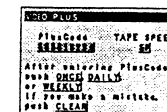
1 Press VIDEO Plus+.

A short beep alerts you if the clock needs to be set.

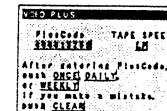


2 Enter the desired programme's PlusCode using the number buttons.

If you make a mistake, press **TIMER REC CLEAR** and enter the PlusCode again.



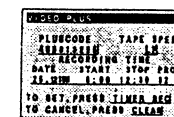
3 Select the tape speed, SP (standard play) or LP (long play), by pressing TAPE SPEED.



4 Press ONCE, DAILY or WEEKLY according to the following:

To record the programme	Press
Only once	ONCE
Monday to Friday at the same scheduled time	DAILY
Every week at the same scheduled time	WEEKLY

The recording information appears on the TV screen: date, program start and stop times, programme position number and tape speed. Check that the information is correct. If not, press **TIMER REC CLEAR**. To preset another timer setting, repeat steps 1 to 4.



Tip

- If you've entered the wrong PlusCode, press **TIMER REC CLEAR** and start again from the beginning.

(continued)

Recording TV programmes using VIDEO Plus+ (continued)

Note

- If the power is interrupted for more than one hour while the VCR is standing by for recording, the timer settings are cleared. Reset the timer.

- Press **TIMER REC ON/OFF**. The **TIMER REC** indicator on the VCR lights up and the VCR stands by for recording. The VCR automatically turns on, records the programme and turns off.

To record satellite broadcasts

- Turn on the satellite tuner.
- On the satellite tuner, select the satellite programme for which you wish to make a timer setting.
- Repeat the steps described above.
- Keep the satellite tuner turned on until the VCR finishes recording the satellite programme for which you have made a timer setting.

To stop recording

To stop while the VCR is recording a programme, press **TIMER REC ON/OFF** to turn off the **TIMER REC** indicator on the VCR.

To use the VCR while recording

You can do the following tasks while recording using VIDEO Plus+.

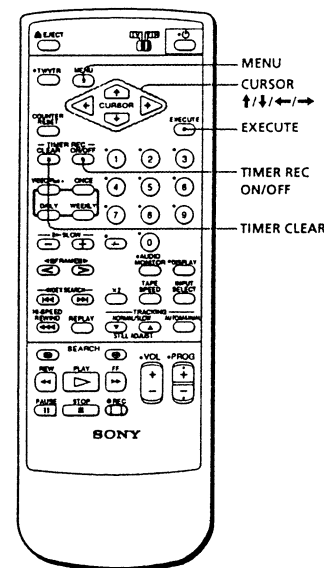
To	Press
Reset the counter to "0H00M00S"	COUNTER RESET
Display tape information on the TV screen	DISPLAY
Check the timer settings	MENU and select TIMER SET/CHECK
Watch another TV programme	TV/VTR (See "Watching a TV programme while recording another" on page 20.)

Using the VCR before recording begins

Press **TIMER REC ON/OFF** to turn off the **TIMER REC** indicator on the VCR, then press **⏻** (on/standby). The VCR is ready for use.

After using the VCR, press **TIMER REC ON/OFF** again to turn on the **TIMER REC** indicator on the VCR. Remember to reset the VCR to stand by for recording before the recording programme begins, or the setting will be cancelled.

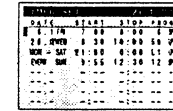
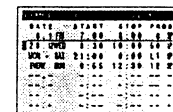
Checking/changing/cancelling timer settings



This section shows you how to check, change and cancel the timer settings after you've stored them in the VCR.

Before you start...

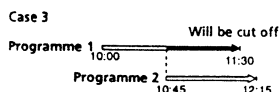
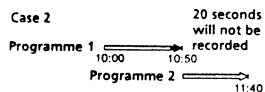
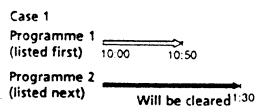
Turn on your TV and tune in to the VCR.

- Press **TIMER REC ON/OFF** to turn off the **TIMER REC** indicator on the VCR.
- Press **⏻** (on/standby) to turn on the VCR, then press **MENU** and select **TIMER SET/CHECK**. Then press **EXECUTE**.
 
- Check the timer settings:
 - If you do not want to change or cancel the settings, press **EXECUTE**, then press **TIMER REC ON/OFF** to return to recording standby.
 - If you want to change or cancel the settings, press **CURSOR** **↑/↓** to move the cursor (■) to the setting you want to change or cancel.
- Change or cancel the timer setting:
 - To change the setting, press **CURSOR** **←/→** to highlight the item you want to change, and reset it using **CURSOR** **↑/↓**. Then, press **CURSOR** **→** to move the cursor to the leftmost column.
 - To cancel the setting, press **TIMER REC CLEAR**.
- Press **EXECUTE**. The VCR returns to the original screen. When there are any other timer settings left in the **TIMER SET/CHECK** menu, turn the VCR off to return to recording standby.

To check the timer settings during timer recording

Press **MENU** and select **TIMER SET/CHECK**. After checking, press **EXECUTE** to turn off the display.

Checking/changing/cancelling timer settings (continued)



When the timer settings overlap

The VCR will not record overlapping programmes. If any of your timer settings overlap, change the settings.

Case 1: If you preset two programmes to start recording at the same time...

The programme listed first in the TIMER SET menu has priority over the other programmes. The timer settings of lower priority programmes will be erased from the TIMER SET menu when the first programme begins recording.

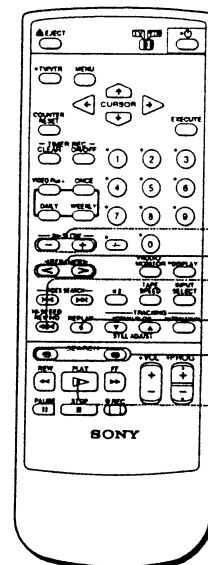
Case 2: If you preset programme 2 to start recording at the same time you preset programme 1 to finish recording...

The last 20 seconds of programme 1 will not be recorded because the VCR will enter recording pause for programme 2 before programme 1 is finished.

Case 3: If you preset programme 2 to start recording before programme 1 is finished recording...

Programme 2 will start recording before programme 1 has finished.

Additional Operations Playing/searching at various speeds



You can play back a tape at various speeds: high-speed, slow motion, frame by frame and so on. These options are also useful for searching for a specific point during playback. The sound is muted during these operations.

Playback options	Operation	To resume normal playback
Playing at various speeds:	During playback, turn the DUAL MODE SHUTTLE ring on the VCR right or left to:	Release the ring.
One-fifth the normal speed	1/5	
Twice the normal speed	X2	
High speed	⏏ or ⏏	
Fast-forwarding/ Rewinding	During stop, turn the DUAL MODE SHUTTLE ring to ▶▶ FF or to ◀◀ REW and release.	Press ▷ PLAY.
Viewing the picture during fast-forward or rewind	During fast-forward, turn the DUAL MODE SHUTTLE ring to ▶▶ FF. During rewind, turn the ring to ◀◀ REW.	To return to the previous mode, release the ring.
Locking in a high-speed picture	During playback or pause, press ⏏ SEARCH or ⏏ SEARCH. To change direction, press ◀◀ FRAME (backward) or ▶▶ FRAME (forward).	Press ▷ PLAY.
Locking in a slow-motion picture	During playback or pause, press ▶▶ SLOW -/+ . To change direction, press ◀◀ FRAME (backward) or ▶▶ FRAME (forward).	Press ▷ PLAY.
Playing frame by frame	During pause, press ▶▶ FRAME to advance the picture one frame or ◀◀ FRAME to reverse the picture one frame.	Press ▷ PLAY.
Playing in reverse	During playback, press ◀◀ FRAME.	Press ▷ PLAY.

(continued)

Tip

- Adjust the picture using the ▼/▲ TRACKING NORMAL/SLOW STILL ADJUST buttons if:
 - Streaks appear while playing in slow motion.
 - Bands appear on the top or bottom while pausing.
 - The picture shakes while pausing.

Note

- If you use these functions in the LP mode, noise may appear or there may be no colour.

Playing/searching at various speeds (continued)

Note

- When rewinding at high speed, you will not see the time counter.

Playback options	Operation	To resume normal playback
Replaying a scene	During playback or pause, press REPLAY and hold it down until the desired scene appears. When you release the button, the scene is played back in slow motion.	Press ▷ PLAY or ⏏ PAUSE .
Rewinding at high speed	Press ◀◀ HI-SPEED REWIND .	Press ▷ PLAY .
Rewind and restart play	During stop, press ▷ PLAY on the VCR while holding the DUAL MODE SHUTTLE ring on the VCR at the ◀◀ REW position, or while pressing down ◀◀ HI-SPEED REW on the VCR.	—

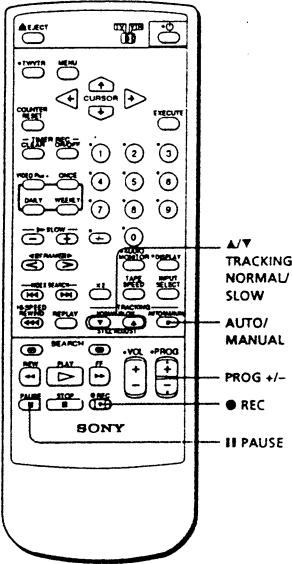
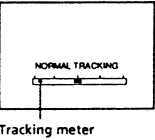
Adjusting the picture

The VCR automatically adjusts the picture for the best possible playback or recording. If, however, you find the automatic adjustment unsatisfactory, you can adjust the picture manually.

Adjusting the tracking

Though the VCR automatically adjusts the tracking when playing a tape (the **AUTO TRACKING** indicator flashes in the display window, then lights steadily), picture or sound distortion may occur if the tape was recorded in poor condition. If so, manually adjust the tracking condition.

Press the **▼/▲ TRACKING NORMAL/SLOW** buttons to display the tracking meter. The distortion should disappear as you press one of the two buttons. If you cannot get a clear picture with manual adjustment, press **TRACKING AUTO/MANUAL** to return to automatic adjustment.



About Optimum Picture Control (OPC)

Optimum Picture Control (OPC) automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you leave OPC on (with the OPC indicator in the display window lit).

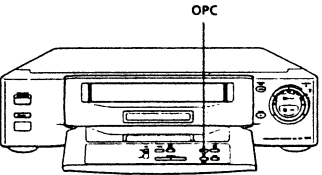
To use OPC during playback

The OPC function automatically works on all types of tapes, including rental tapes. You can play a tape using the OPC function even if the tape was not recorded with it.

To use OPC while recording

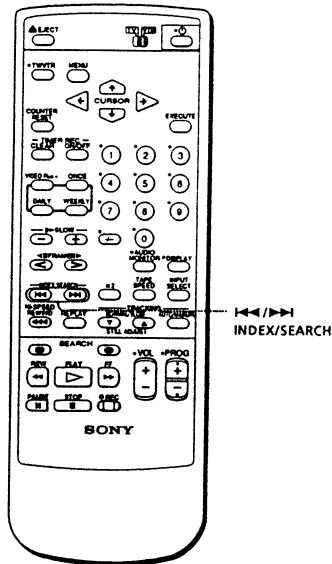
Whenever you insert a tape and first start recording, the VCR adjusts to the tape using the OPC function (the OPC indicator flashes rapidly). This adjustment is retained until the tape is ejected. There is a short delay before the VCR actually starts recording while the VCR analyzes the tape.

If you want to start recording precisely the first time you record, set the VCR to recording pause mode (the OPC indicator flashes slowly) and press **● REC** to let the VCR analyze the tape. When the OPC indicator stops flashing, press **⏏ PAUSE** to start recording. Recording begins immediately.



- Notes**
- Tapes recorded using the OPC function are played back normally on VCRs that do not have the OPC function.
 - Press **⏏ PAUSE** to release recording after the OPC indicator stops flashing. If you start recording before the OPC indicator stops flashing, the OPC function is cancelled.

Searching using the index function



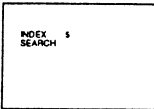
The VCR automatically marks an index signal at the point where recording starts (with the exception of when you start recording from recording pause). Use this as a reference to find the beginning of the recording. Since the index number indicates the relative position from the current position, specify how many index signals ahead or behind the specific index signal is from the current position.

1 Insert an indexed tape into the VCR.

2 Press the INDEX SEARCH buttons repeatedly until the index number you want appears on the TV screen:

- To locate succeeding programmes, press INDEX SEARCH.
- To locate preceding programmes, press INDEX SEARCH.

The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.



Looking at menu options

The SET UP MENU provides you with various options to set up and customise your VCR. See the table below for the available menu choices. Initial settings are indicated in bold letters.

Menu choices

Menu option	Set this option to
TIMER REC-REW	• ON to automatically rewind the tape after all timer settings have been recorded. • OFF to cancel this setting.*
BACKLIGHT	• ON to turn on the LCD backlight. • OFF to turn it off.
RF MODULATOR	• ON if you have connected the VCR to your TV using only the aerial cable. • OFF if you have connected the VCR to your TV using the EURO-AV cable.
AUDIO MIX	• ON to listen to the hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button becomes inoperable. • OFF to select the sound using the AUDIO MONITOR button. For details, see page 37.
HI-FI AUDIO	• STD to record standard sound on a hi-fi audio track. • NICAM to record NICAM broadcasts on a hi-fi audio track. For details, see page 20.

Tip
• See "How sound is recorded on a video tape" on page 17.

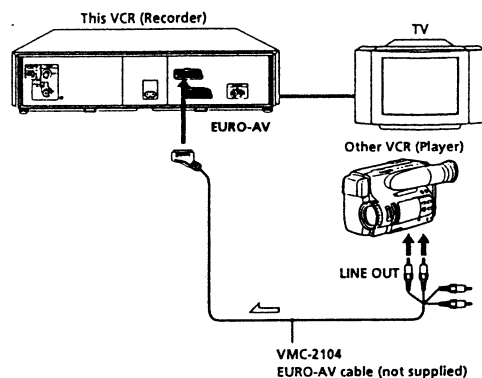
* If the tape has been recorded to the end, the VCR rewinds it regardless of this setting.

Editing

Editing with another VCR

This section shows you how to edit to or from another VCR or camcorder. You can make a copy of a tape using this VCR for recording or playback.

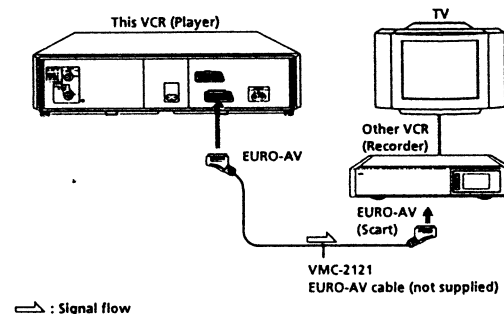
How to hook up to record on this VCR



Tips

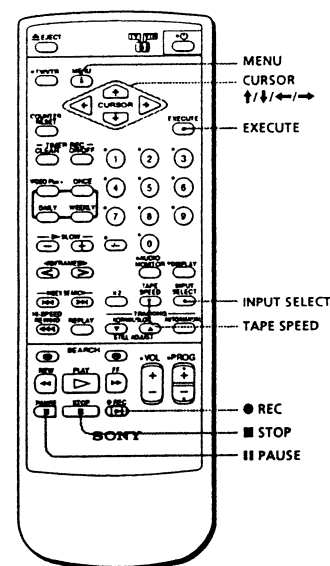
- Make sure you connect the plugs to jacks of the same colour.

How to hook up to record on another VCR



Tip

- If the other VCR doesn't have a EURO-AV (Scart) connector, use the VMC-2106 EURO-AV cable instead and connect the cable to the line in jacks of the other VCR.



Operation (when recording on this VCR)

Before you start editing

- Press INPUT SELECT to display "L2" in the display window.
- Press TAPE SPEED to select the recording tape speed (SP/LP).
- On this VCR, set the EDIT switch on the VCR to ON. If the other VCR has a similar switch, set it to ON as well.

- 1 Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.
- 2 Insert a tape into this (recording) VCR. Search for the point to start recording and press II PAUSE.
- 3 Press ● REC on this VCR and set it to recording pause.
- 4 To start editing, press the II PAUSE buttons on both VCRs to release the VCRs from pause. For best results, press the pause button on the other VCR before pressing II PAUSE on this VCR.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tips

- To make your editing more precise, use the pause buttons on both VCRs.
- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording (Assemble Editing).
- See "How sound is recorded on a video tape" on page 17.

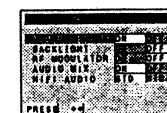
Note

- If AUDIO MIX remains ON, the AUDIO MONITOR button remains inoperative.

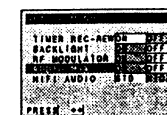
Listening to both audio tracks during playback

When playing an audio-dubbed tape, you have a choice of listening sound. To listen to the sounds recorded on the hi-fi audio and normal audio tracks at the same time, use the SET UP MENU.

- 1 Press MENU and select SET UP MENU.



- 2 Set AUDIO MIX to ON by pressing CURSOR ↑/↓/←/→. The AUDIO MONITOR button becomes inoperative, and the sound you hear is mixed.



- 3 Press EXECUTE to store the setting. After playing the audio-inserted tape, reset AUDIO MIX to OFF.

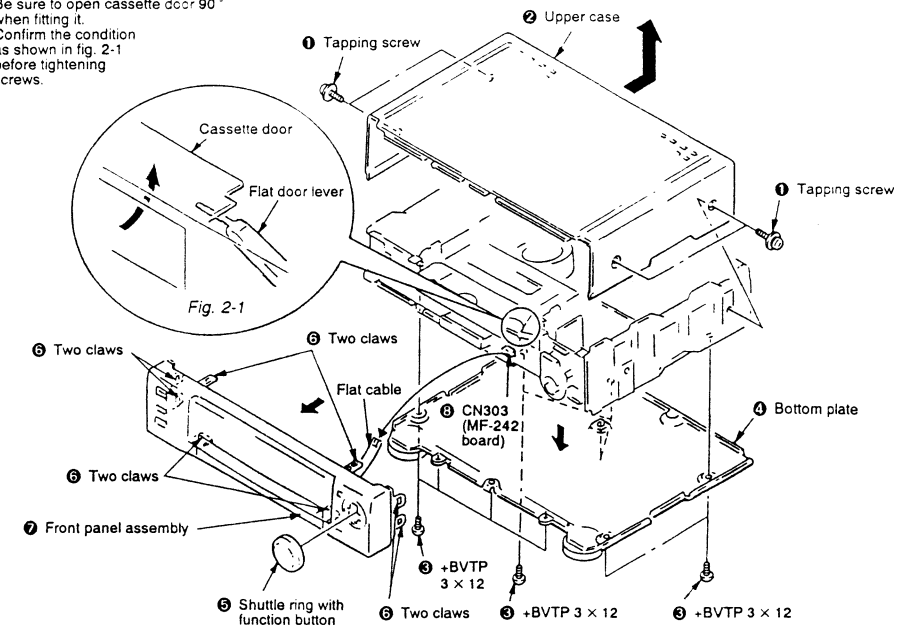
SECTION 2

DISASSEMBLY

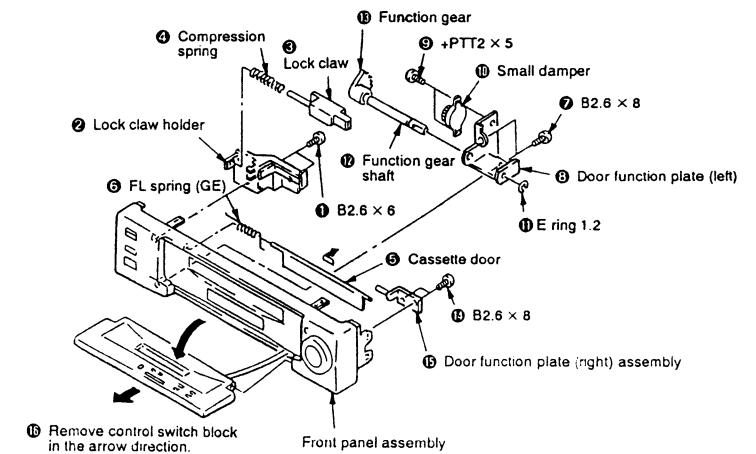
Note: Follow the disassembly procedure in the numerical order given.

2-1. FRONT PANEL ASSEMBLY AND CASE

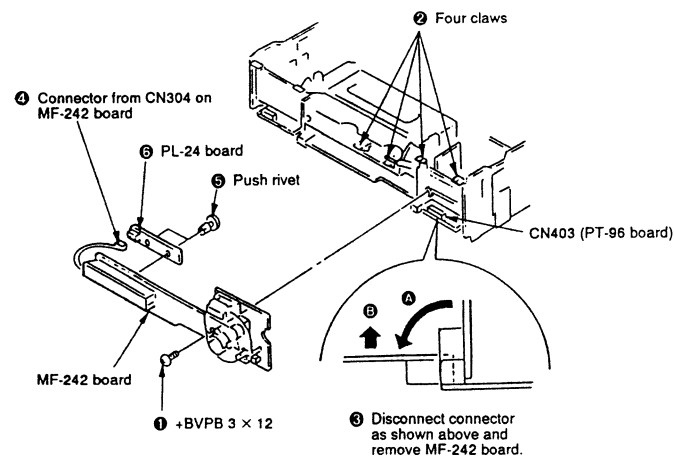
- * Note on fitting front panel assembly
Be sure to open cassette door 90° when fitting it.
- * Confirm the condition as shown in fig. 2-1 before tightening screws.



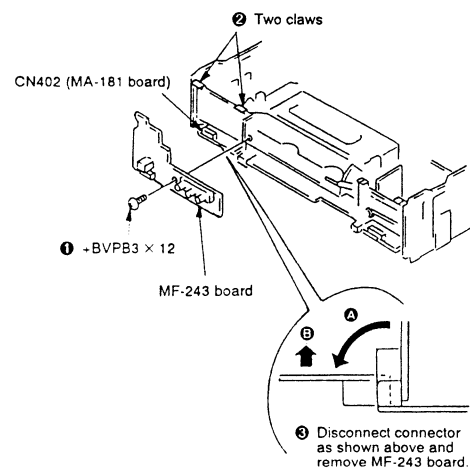
2-2. CONTROL SWITCH BLOCK



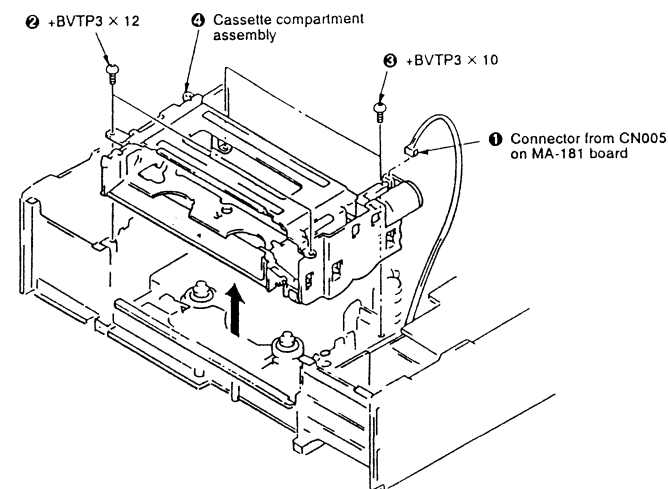
2-3. MF-242 AND PL-24 BOARDS



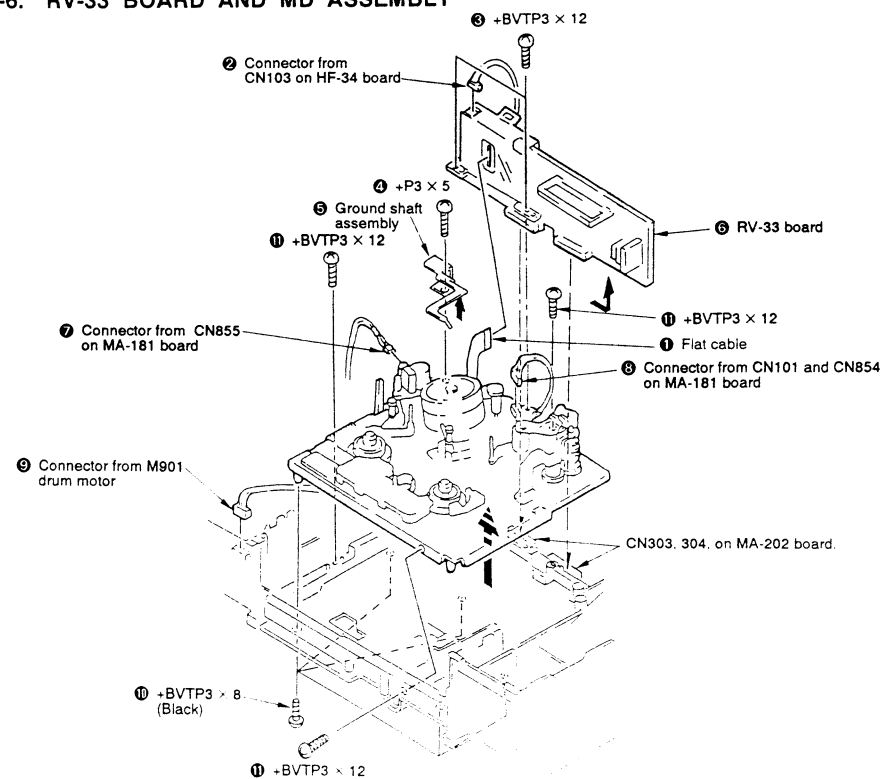
2-4. MF-243 BOARD



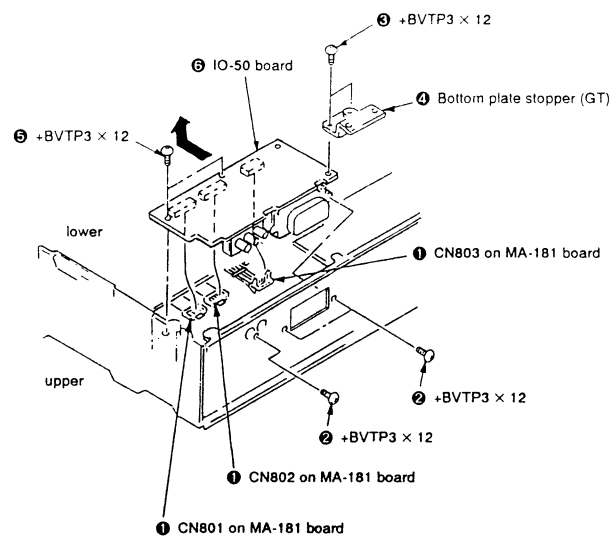
2-5. CASSETTE COMPARTMENT ASSEMBLY



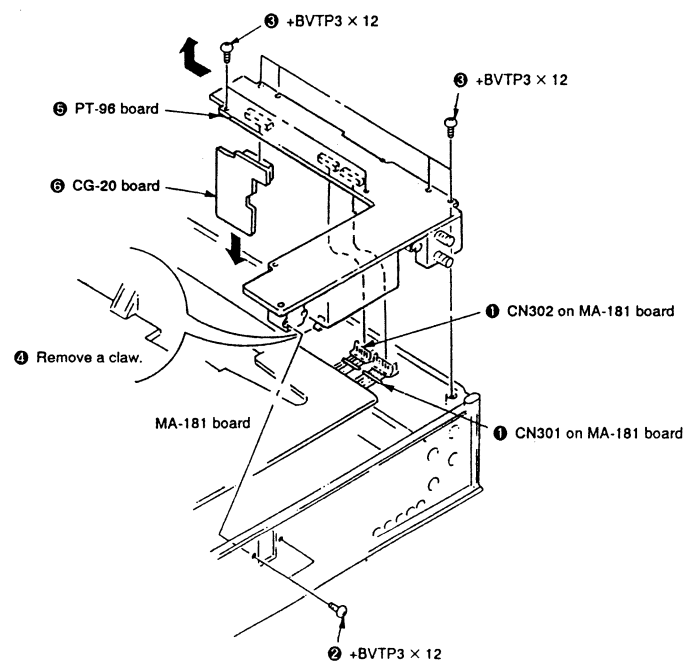
2-6. RV-33 BOARD AND MD ASSEMBLY



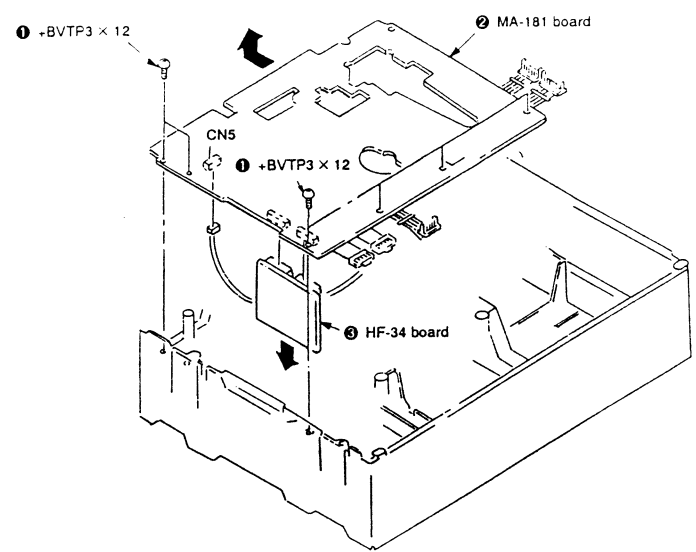
2-7. IO-50 BOARD



2-8. PT-96 AND CG-20 BOARDS

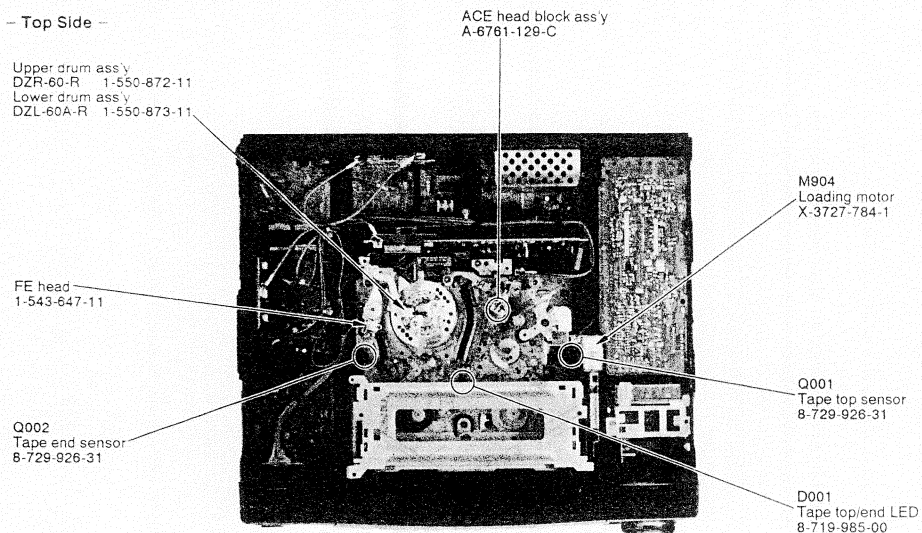


2-9. MA-181 AND HF-34 BOARDS

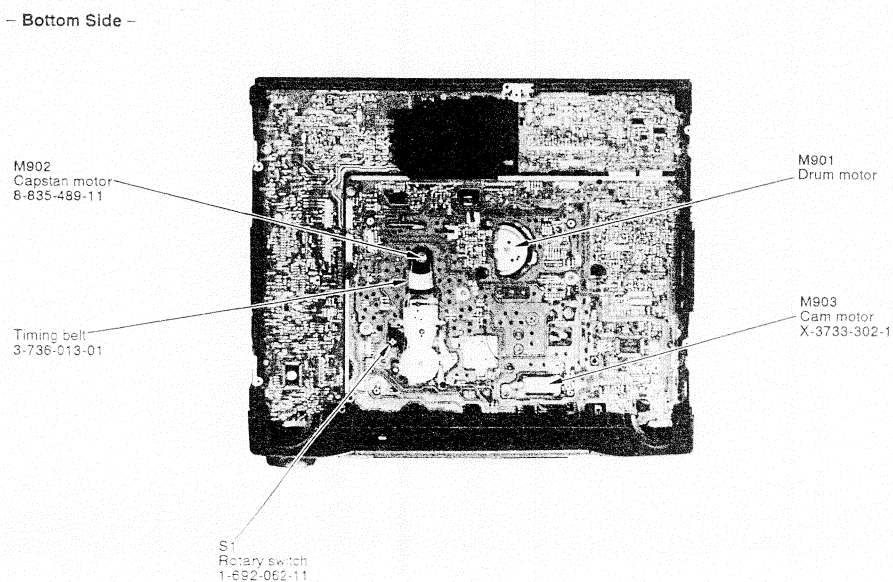


2-10. INTERNAL VIEWS

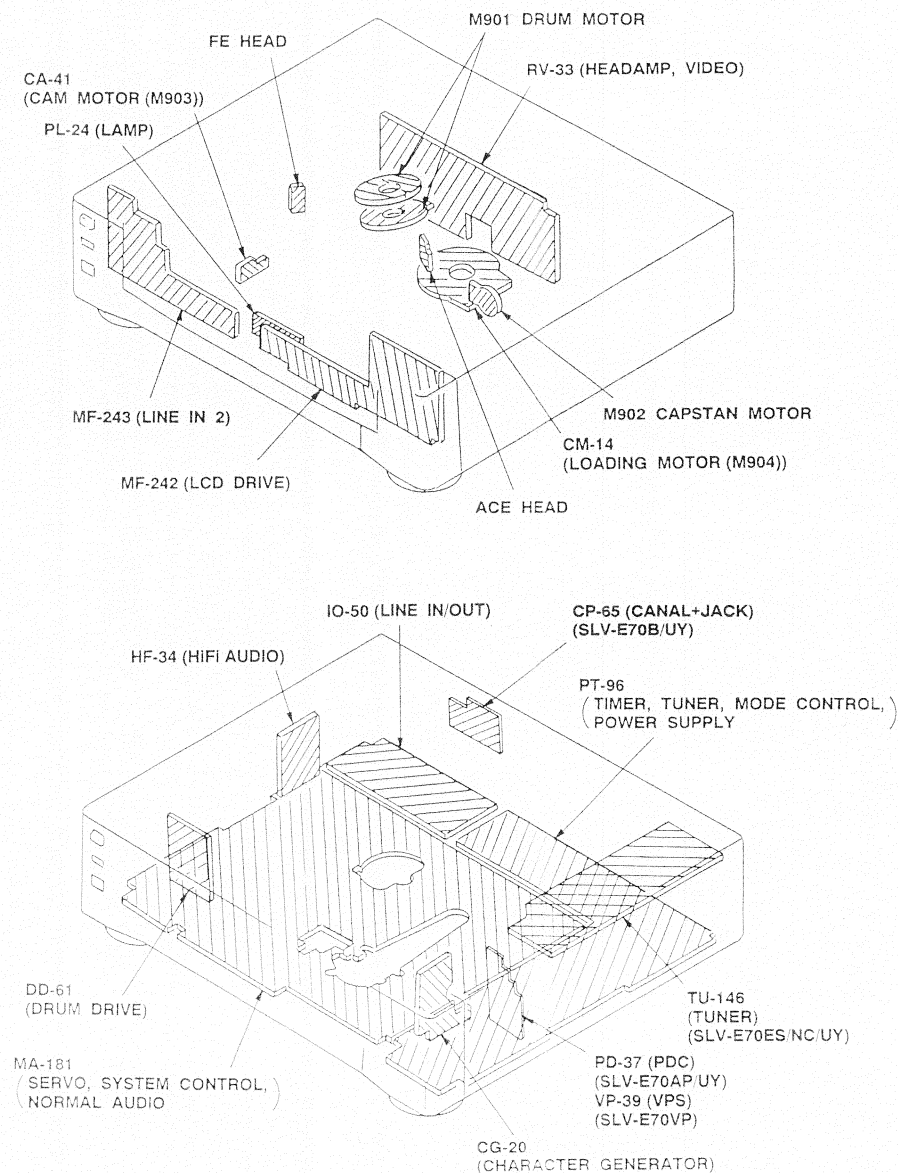
— Top Side —



— Bottom Side —

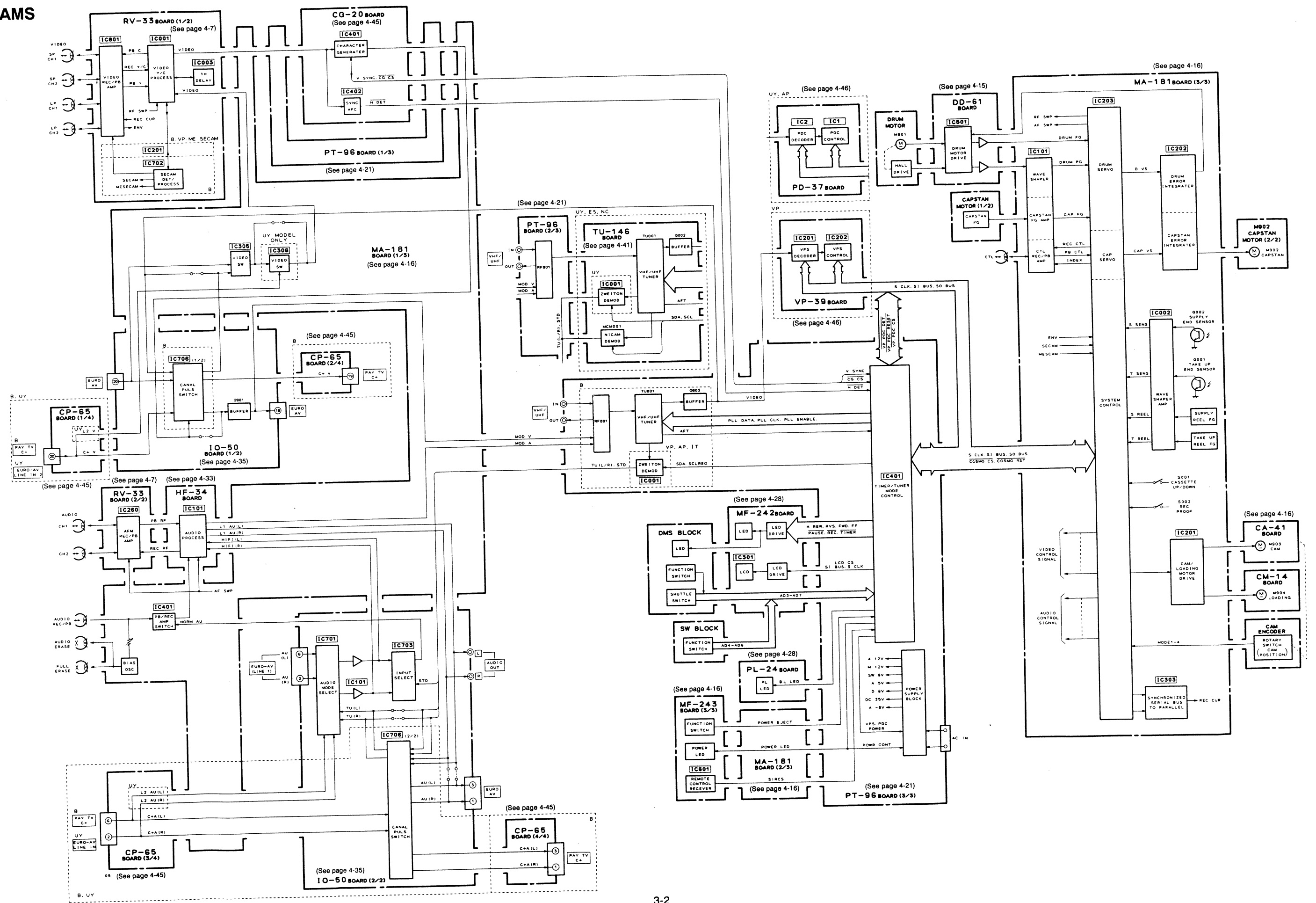


2-11. CIRCUIT BOARDS LOCATION

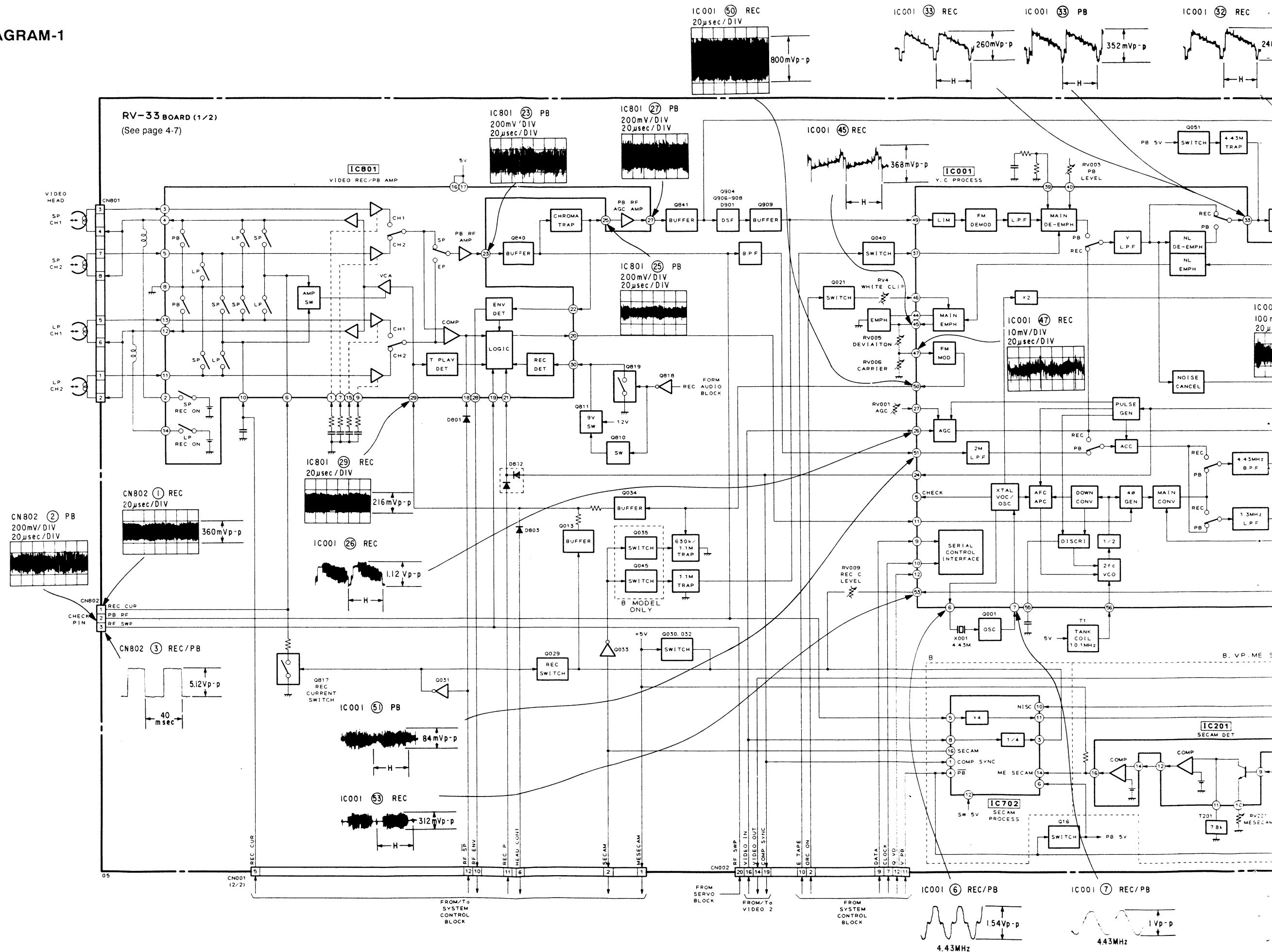


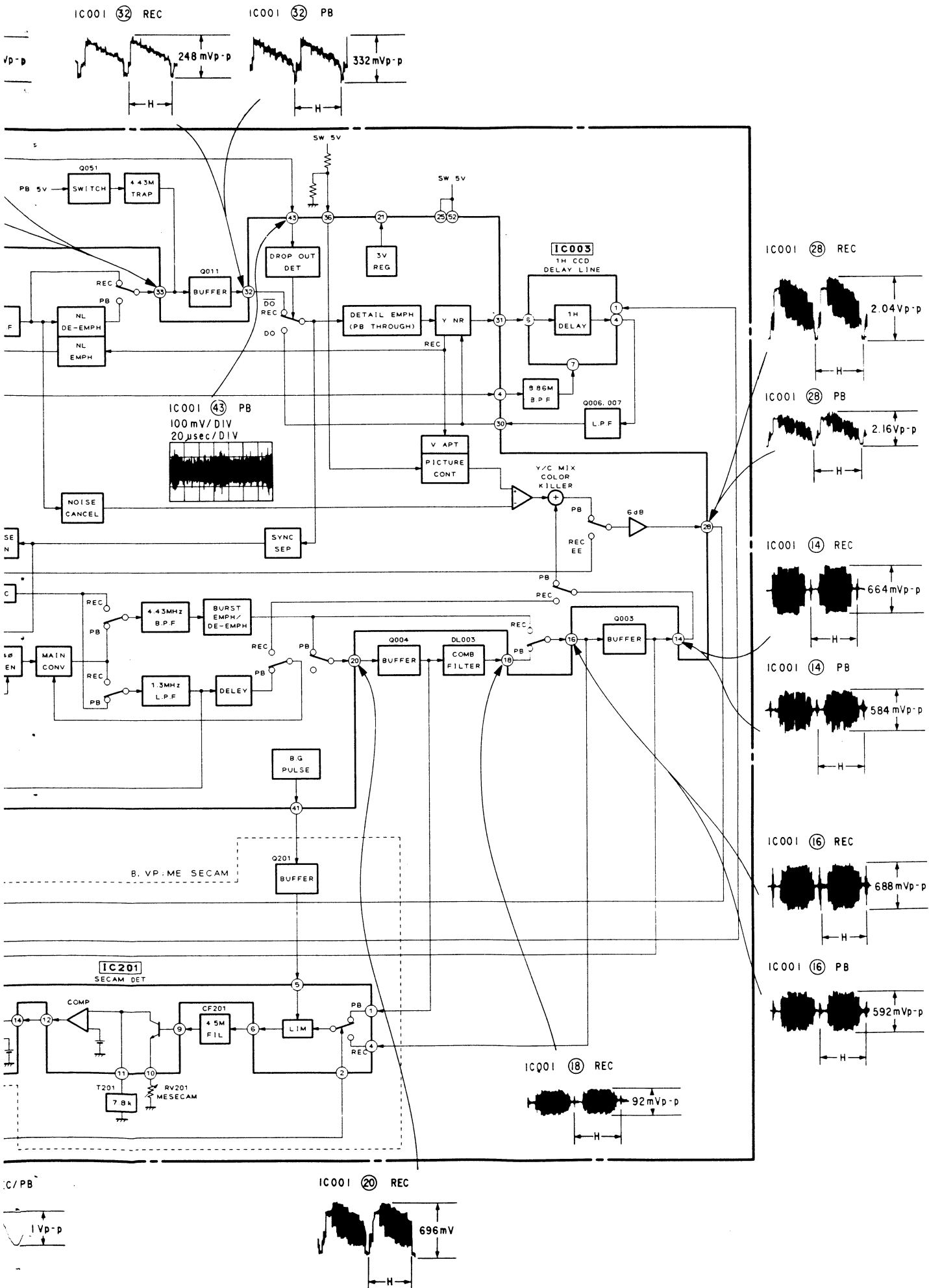
SECTION 3 BLOCK DIAGRAMS

DIAGRAM

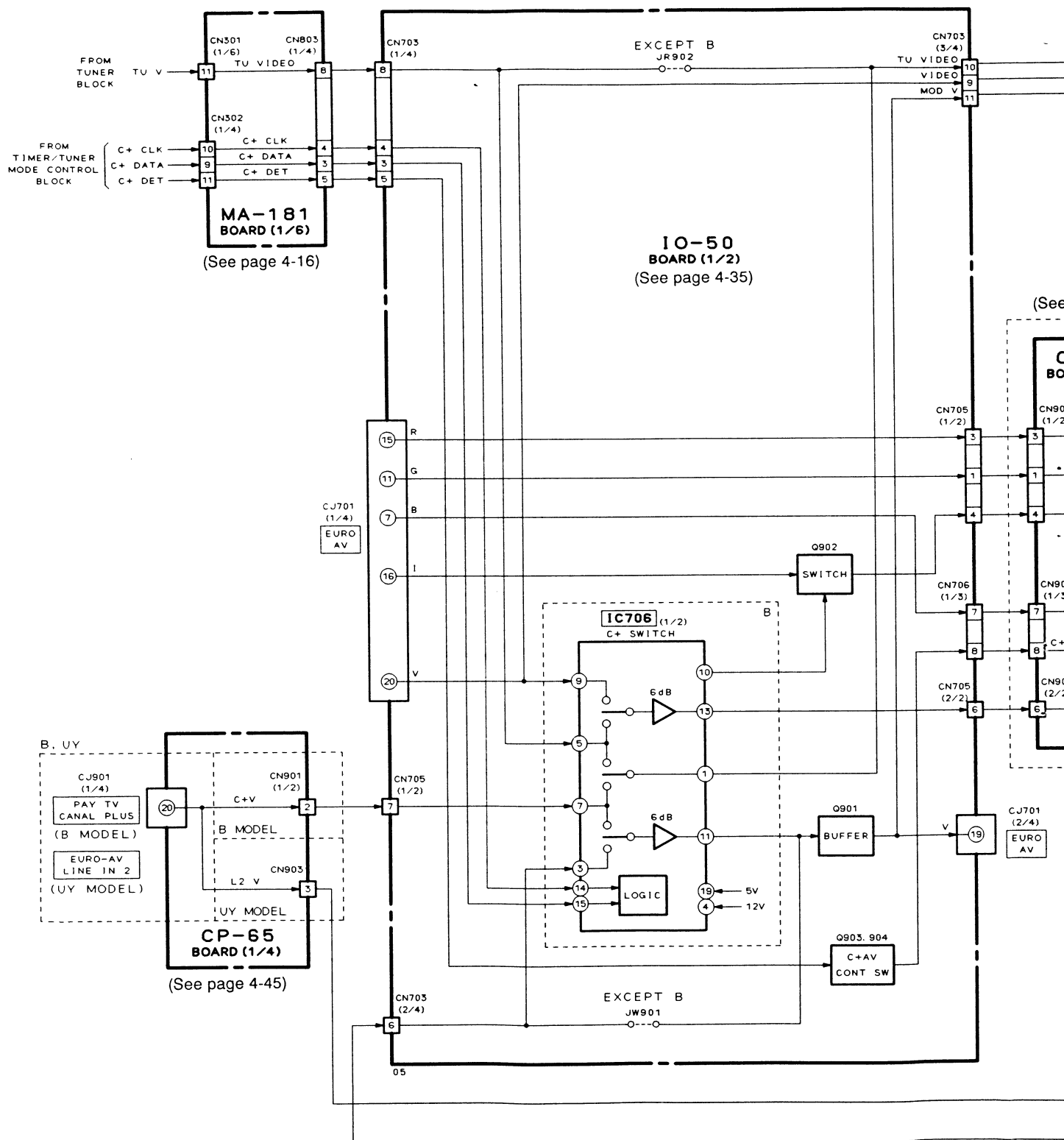


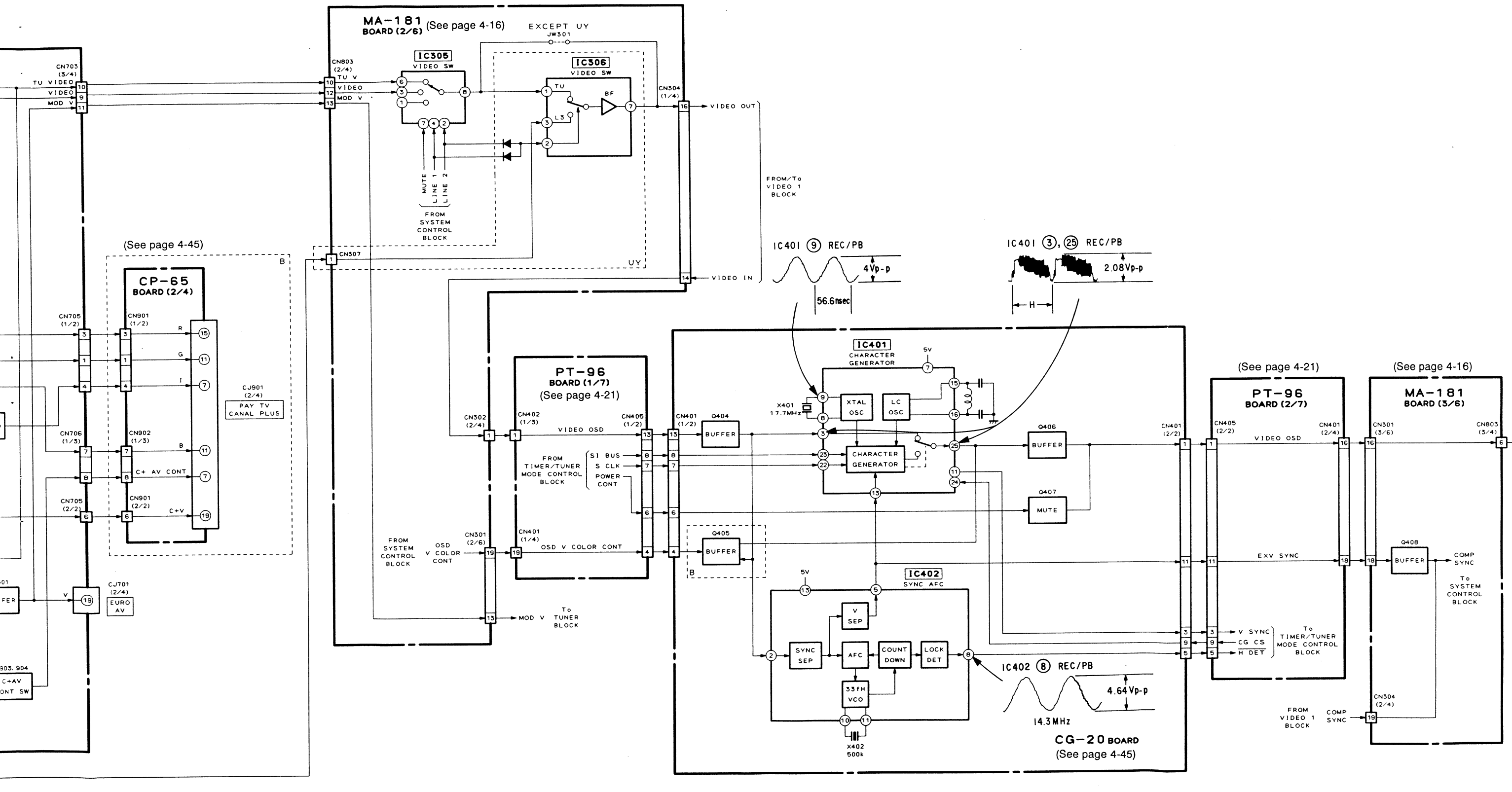
3-2. VIDEO BLOCK DIAGRAM-1



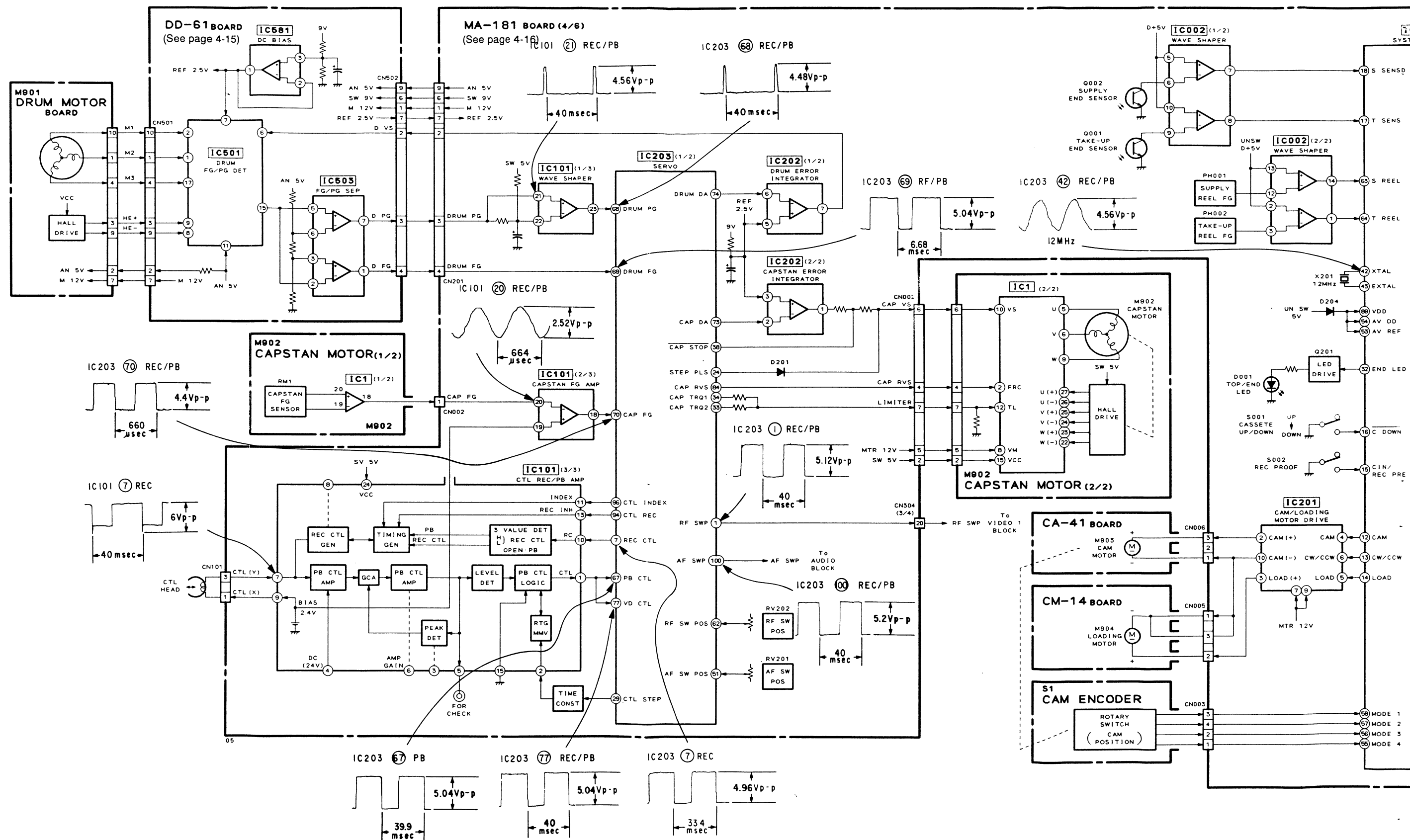


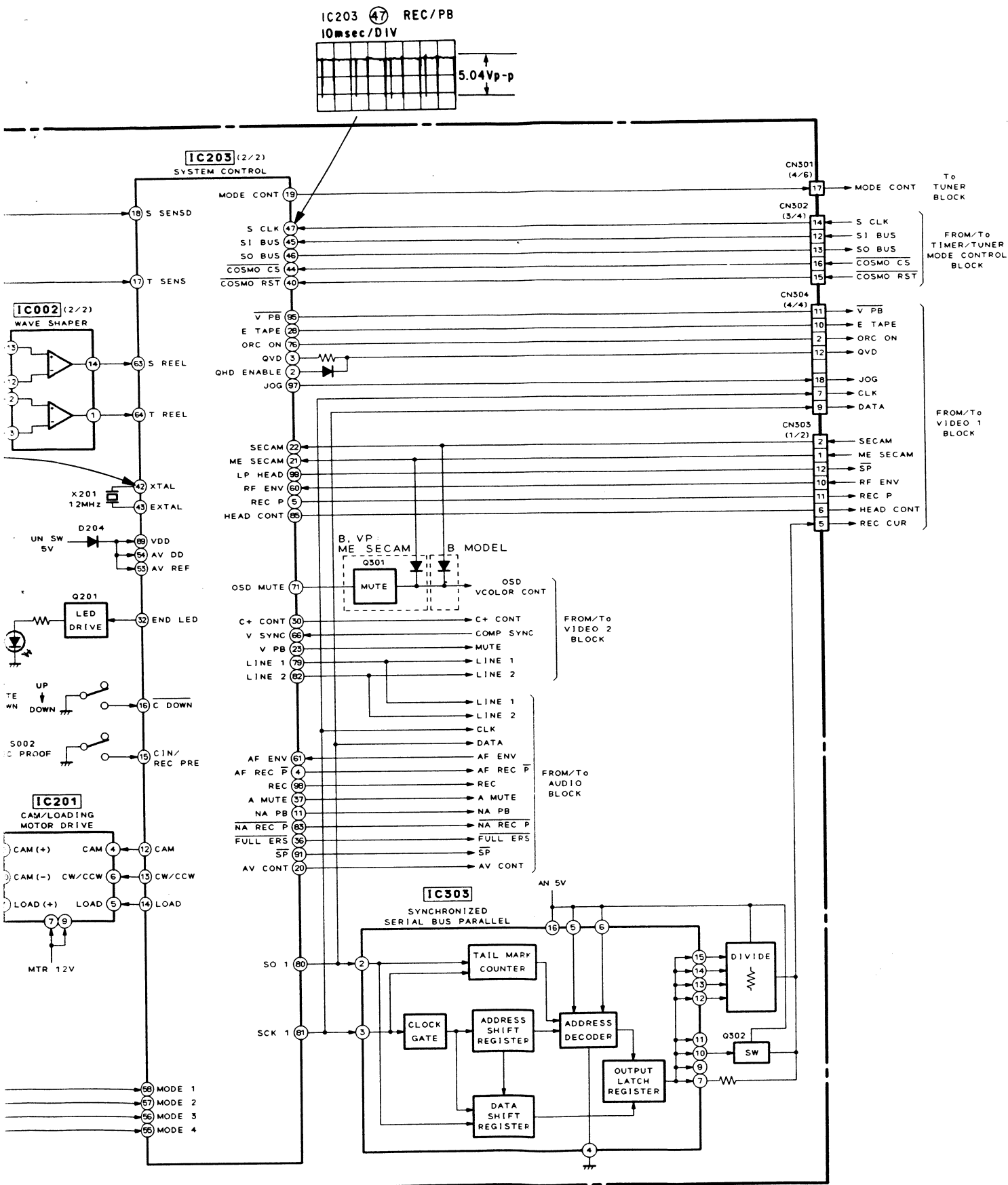
3-3. VIDEO BLOCK DIAGRAM-2



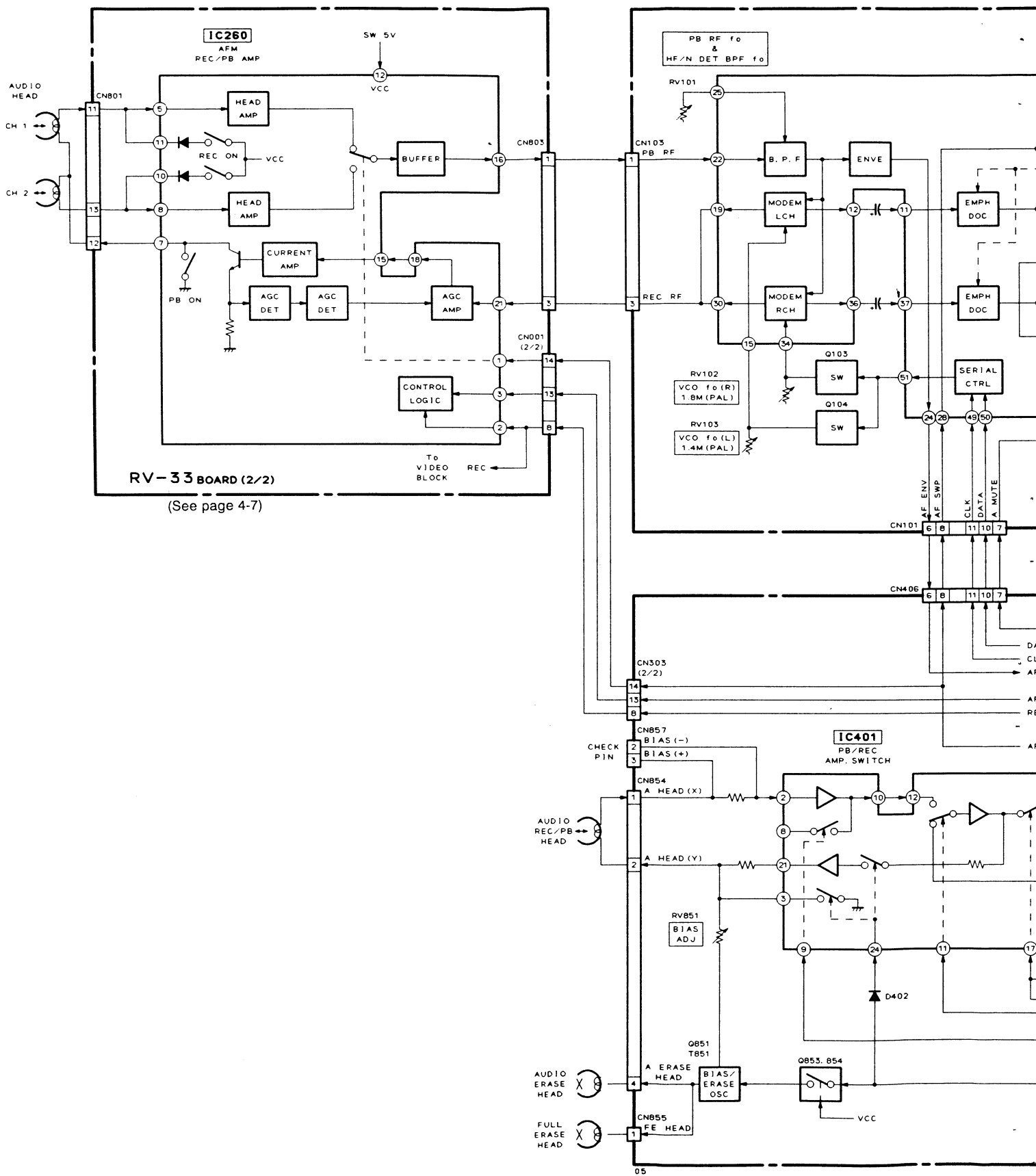


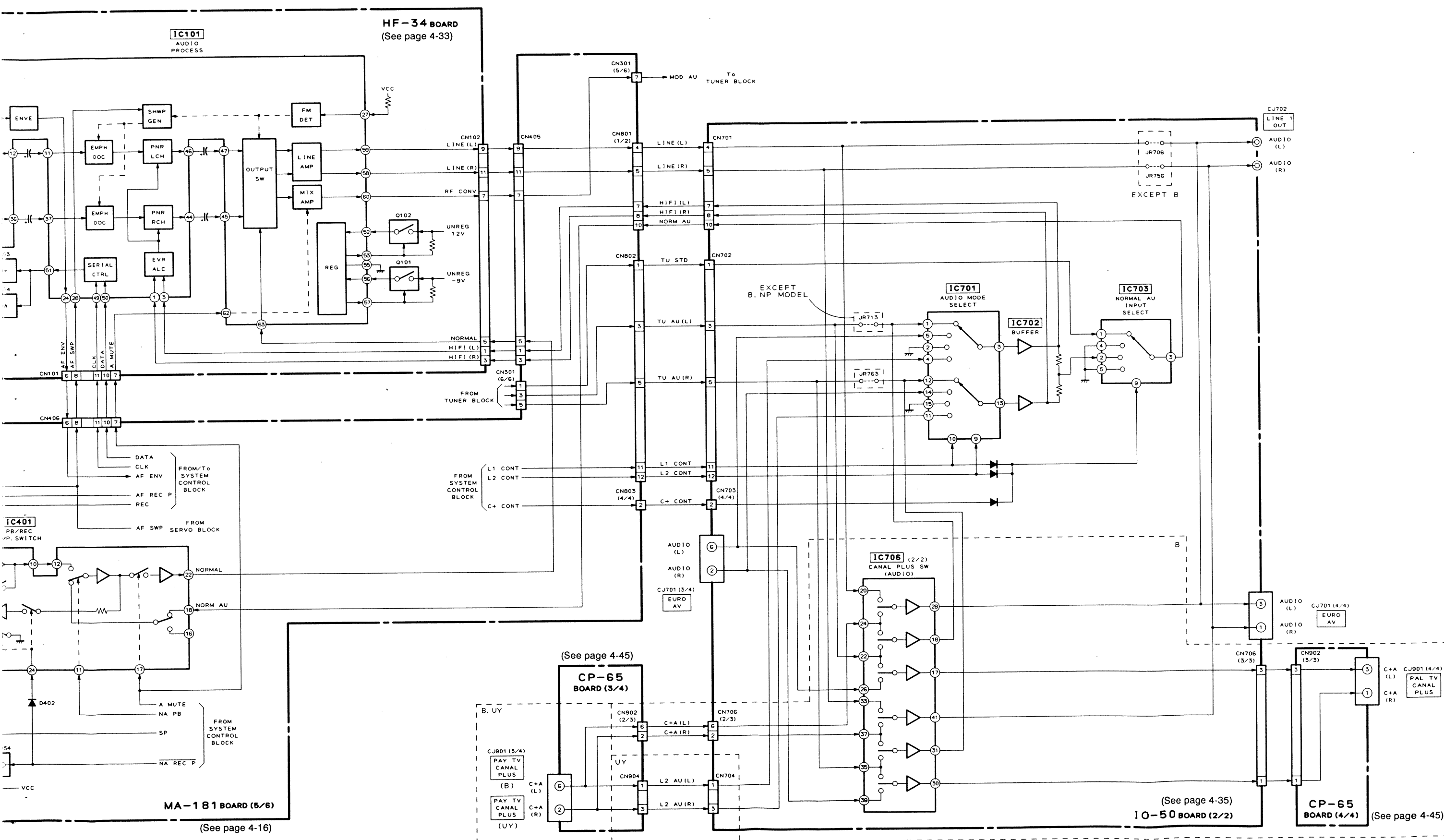
3-4. SERVO, SYSTEM CONTROL BLOCK DIAGRAM



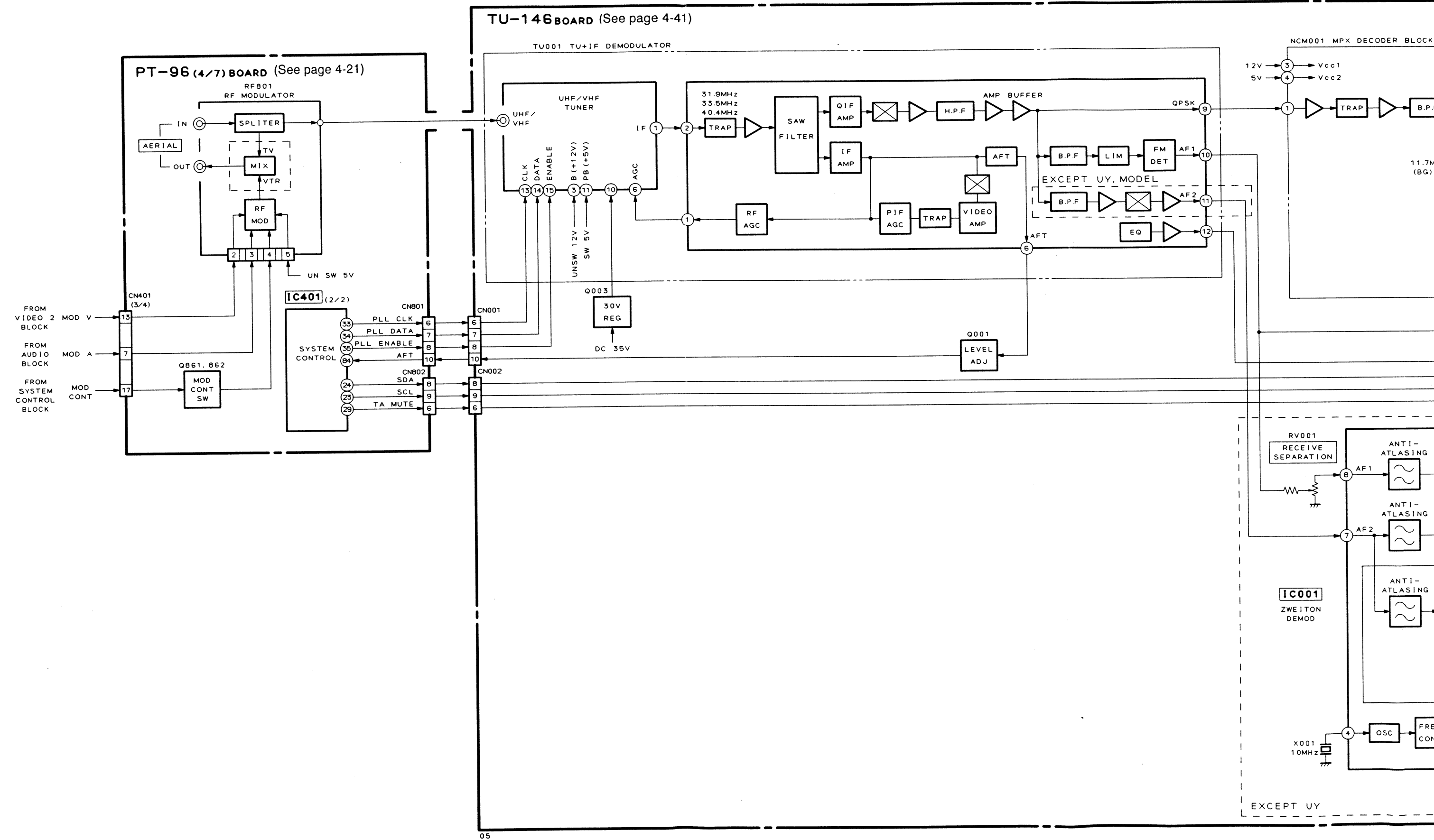


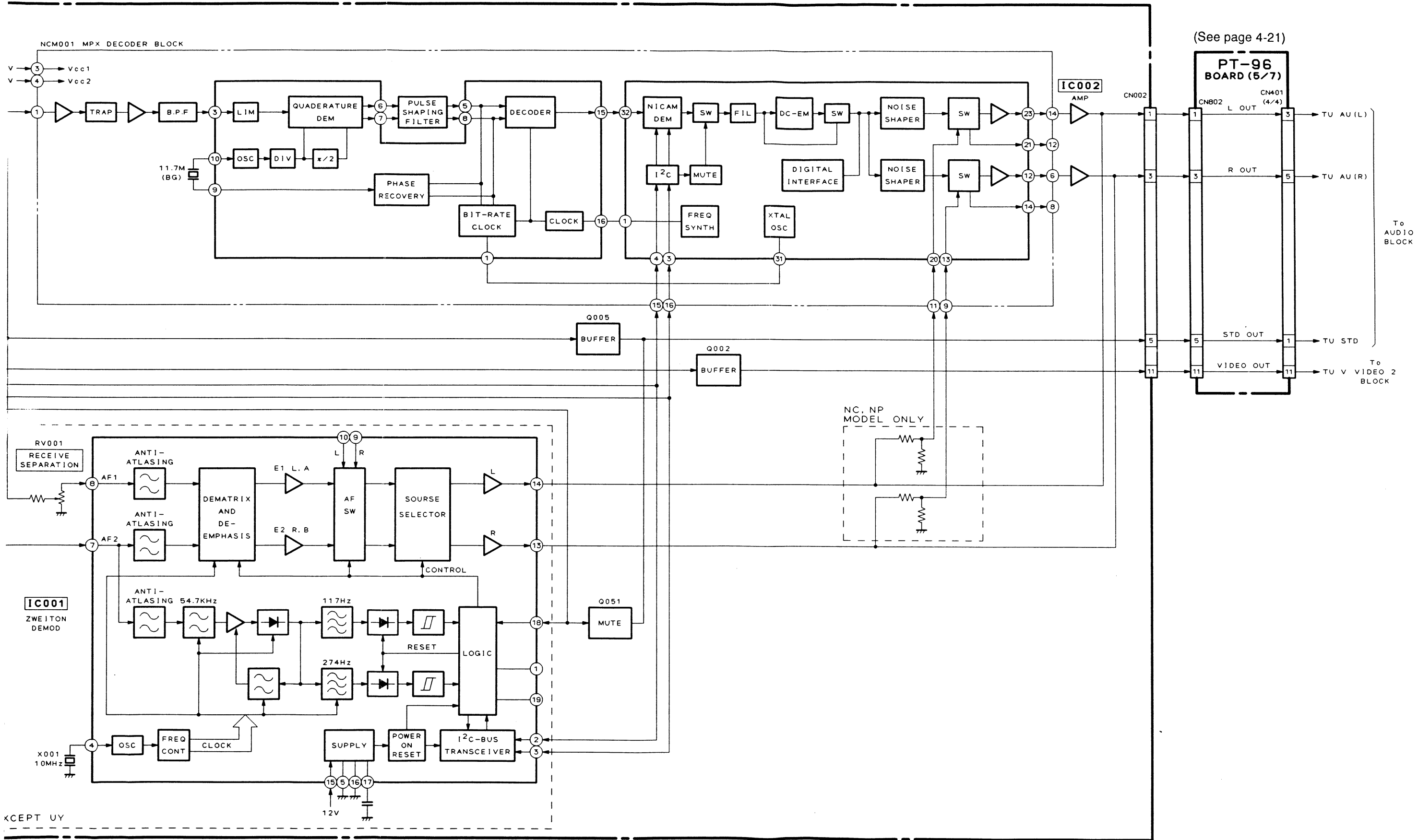
3-5. AUDIO BLOCK DIAGRAM





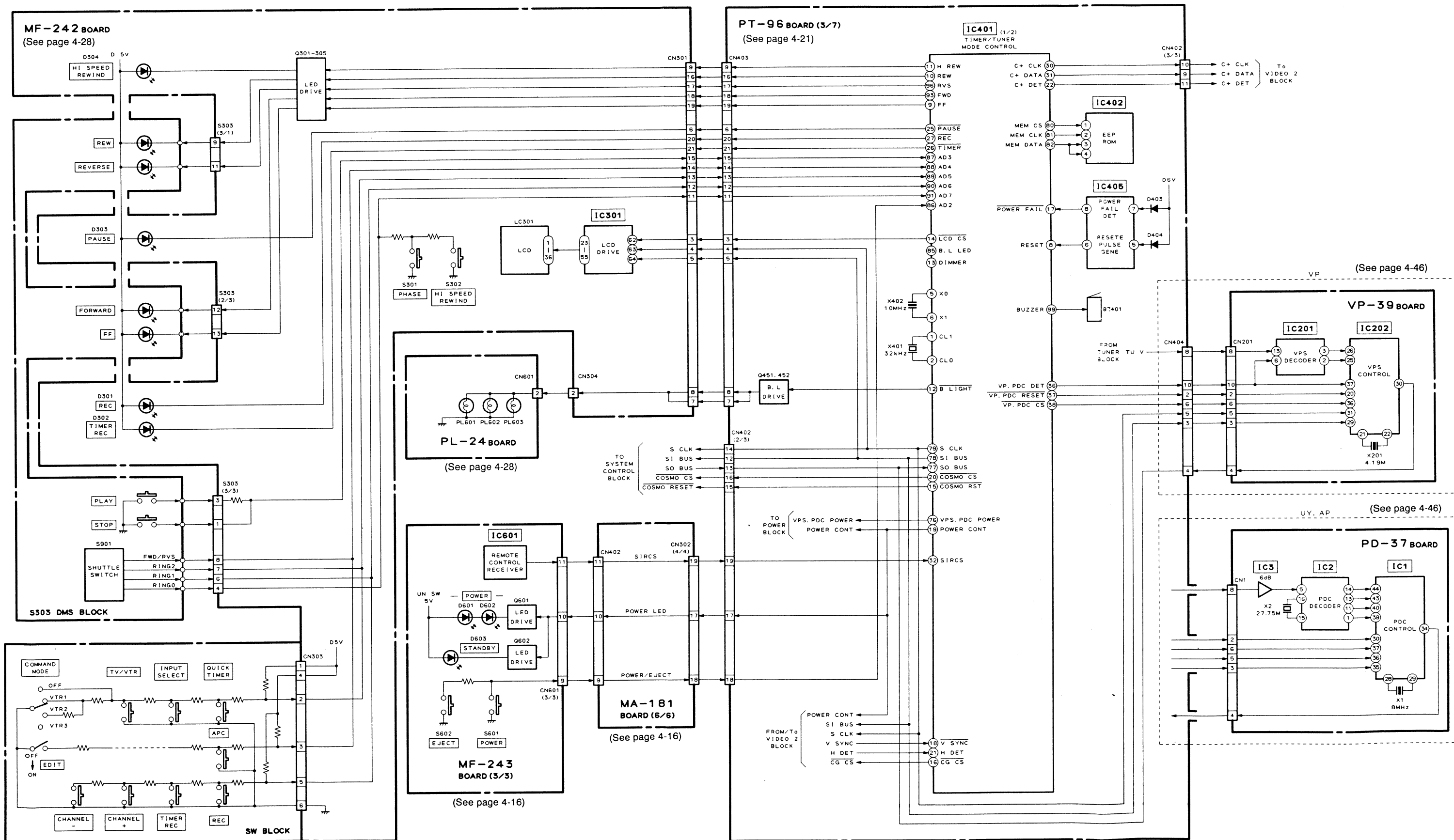
3-7. TUNER BLOCK DIAGRAM-2

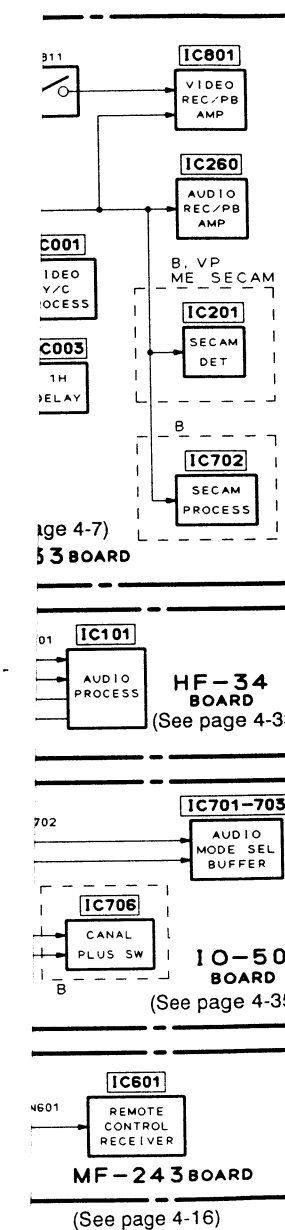
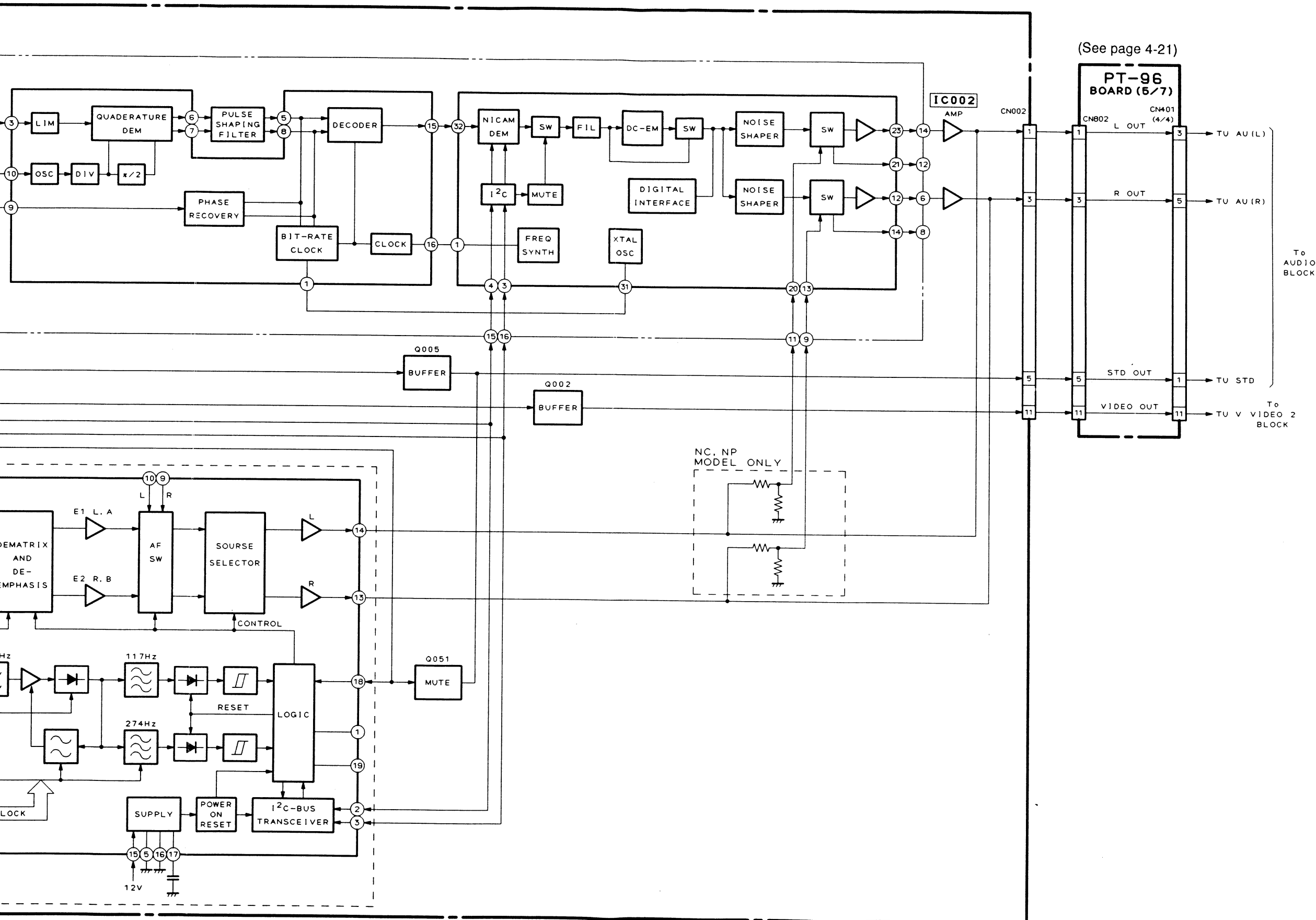




XCEPT UY

3-8. TIMER, MODE CONTROL BLOCK DIAGRAM





4-1. FRAME SCHEMATIC DIAGRAM

SECTION 4 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- — indicates a lead wire mounted on the component side.
- — indicates a lead wire mounted on the printed side.
- : Through hole.
- : Parts mounted on the conductor side.
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.*
- Circled numbers refer to waveforms.

Caution:

Pattern face side: Parts on the pattern face side seen from the (Conductor Side) pattern face are indicated.
Parts face side: Parts on the parts face side seen from the (Component Side) parts face are indicated.

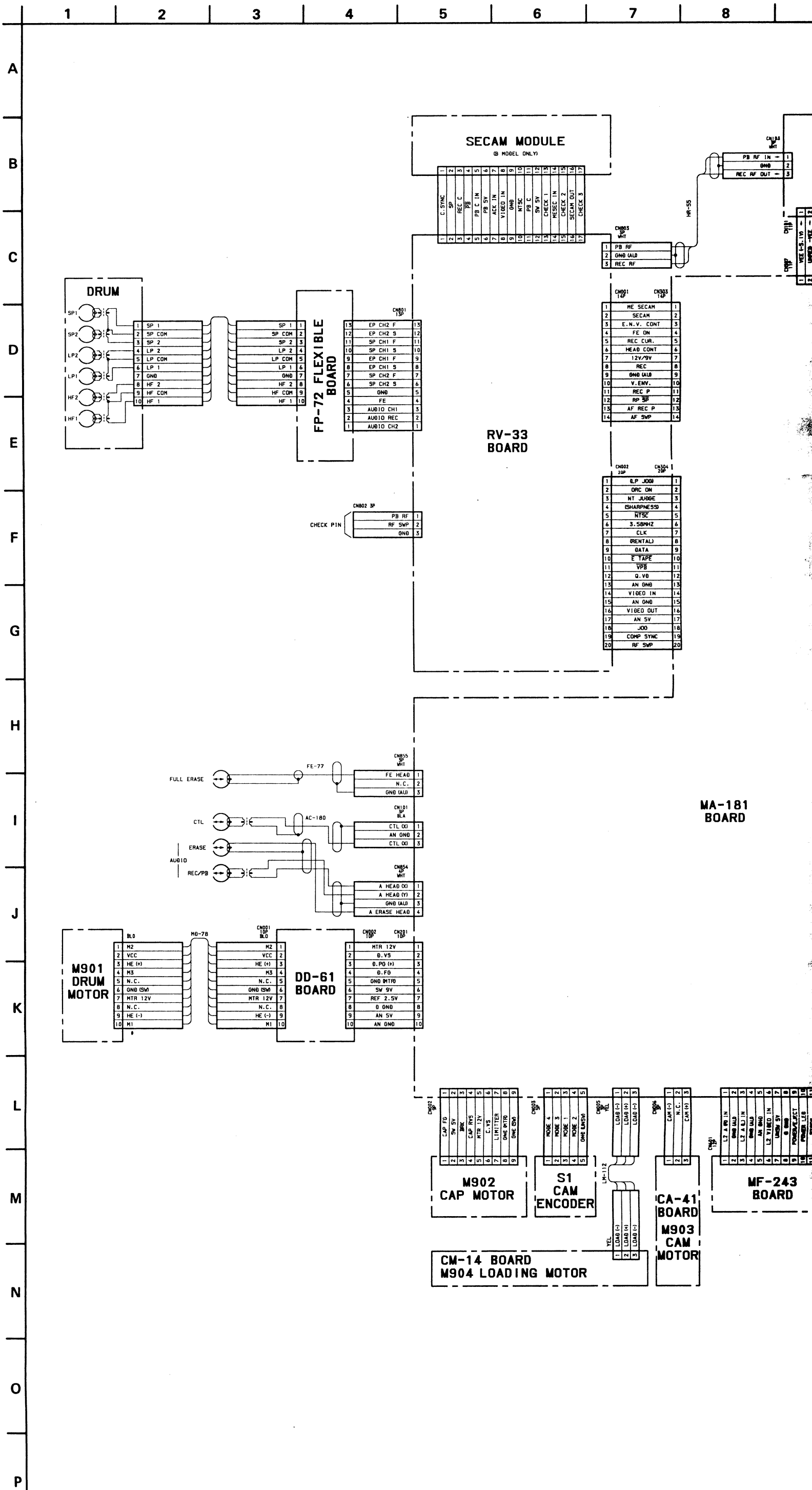
For schematic diagram:

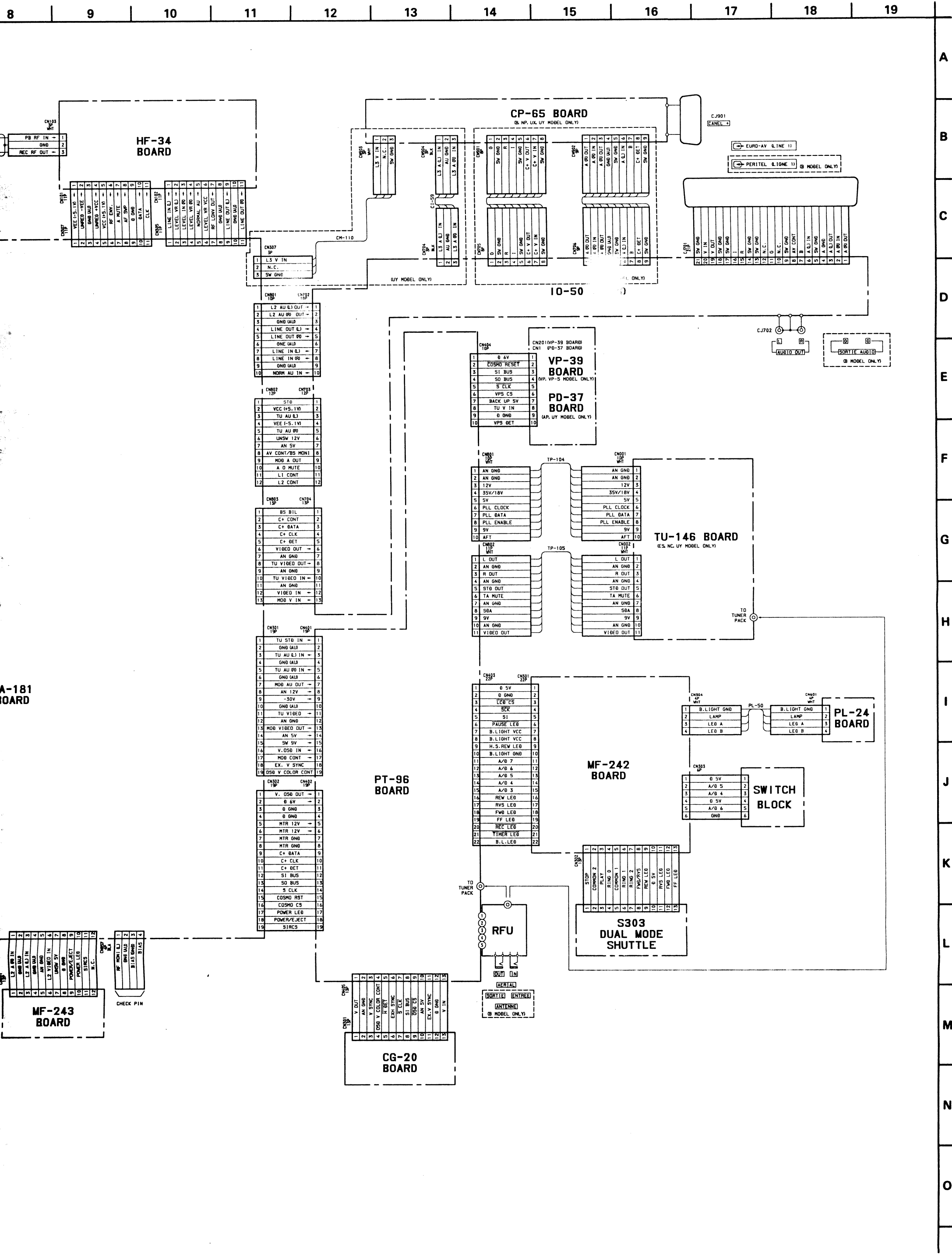
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W (Chip resistors: 1/10W) unless otherwise noted.
kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊞ : nonflammable resistor.
- ⊞ : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.*
- : B + Line.*
- : B - Line.*
- ⊞ : IN/OUT direction of B line (+, -).*
- Circled numbers refer to waveforms.*
- Voltages are dc between measurement point.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage are taken with a VOM (Input impedance 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

* : indicated by the color red.





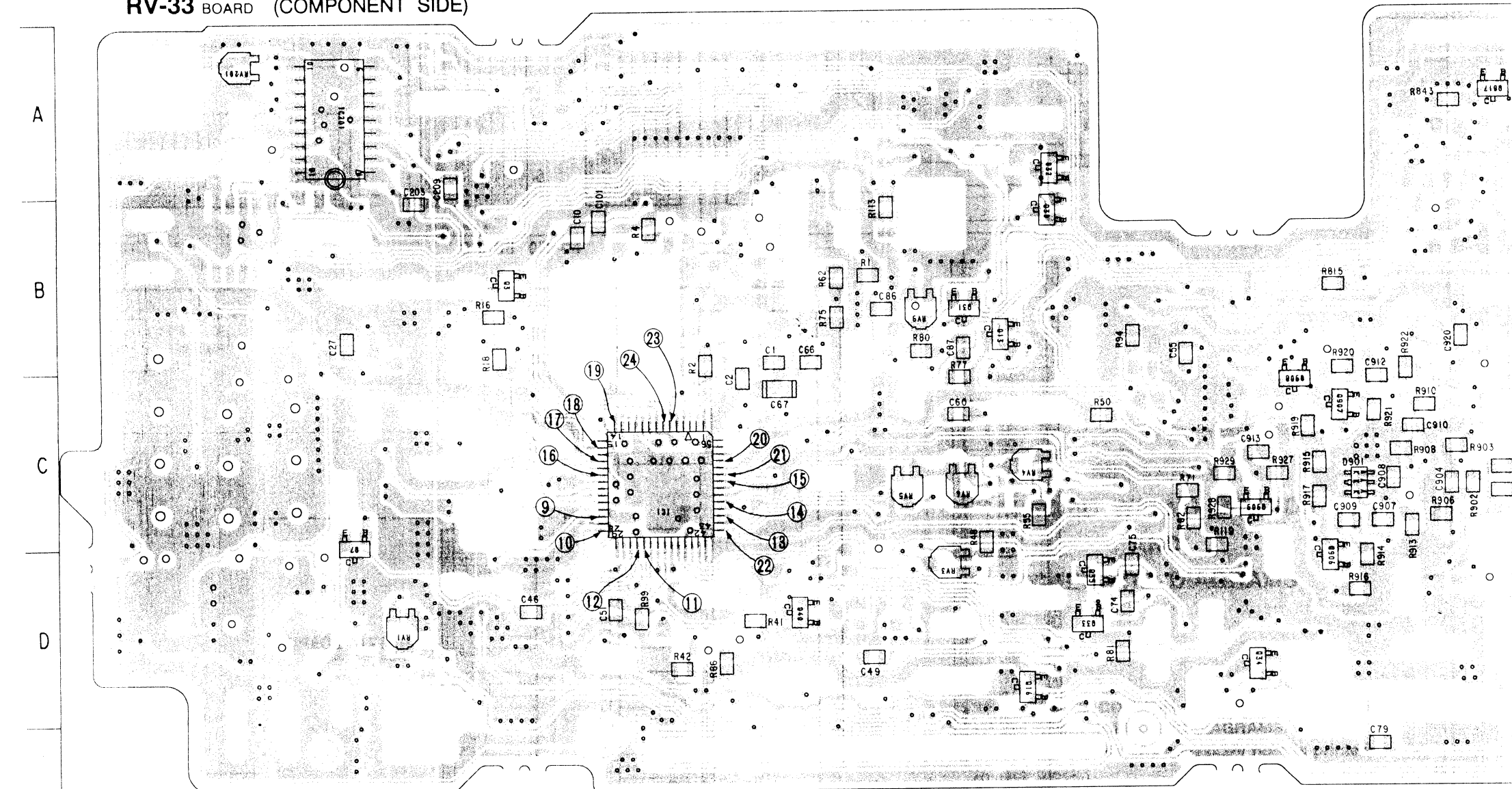
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

RV-33 (HEAD AMP, VIDEO) PRINTED WIRING BOARD

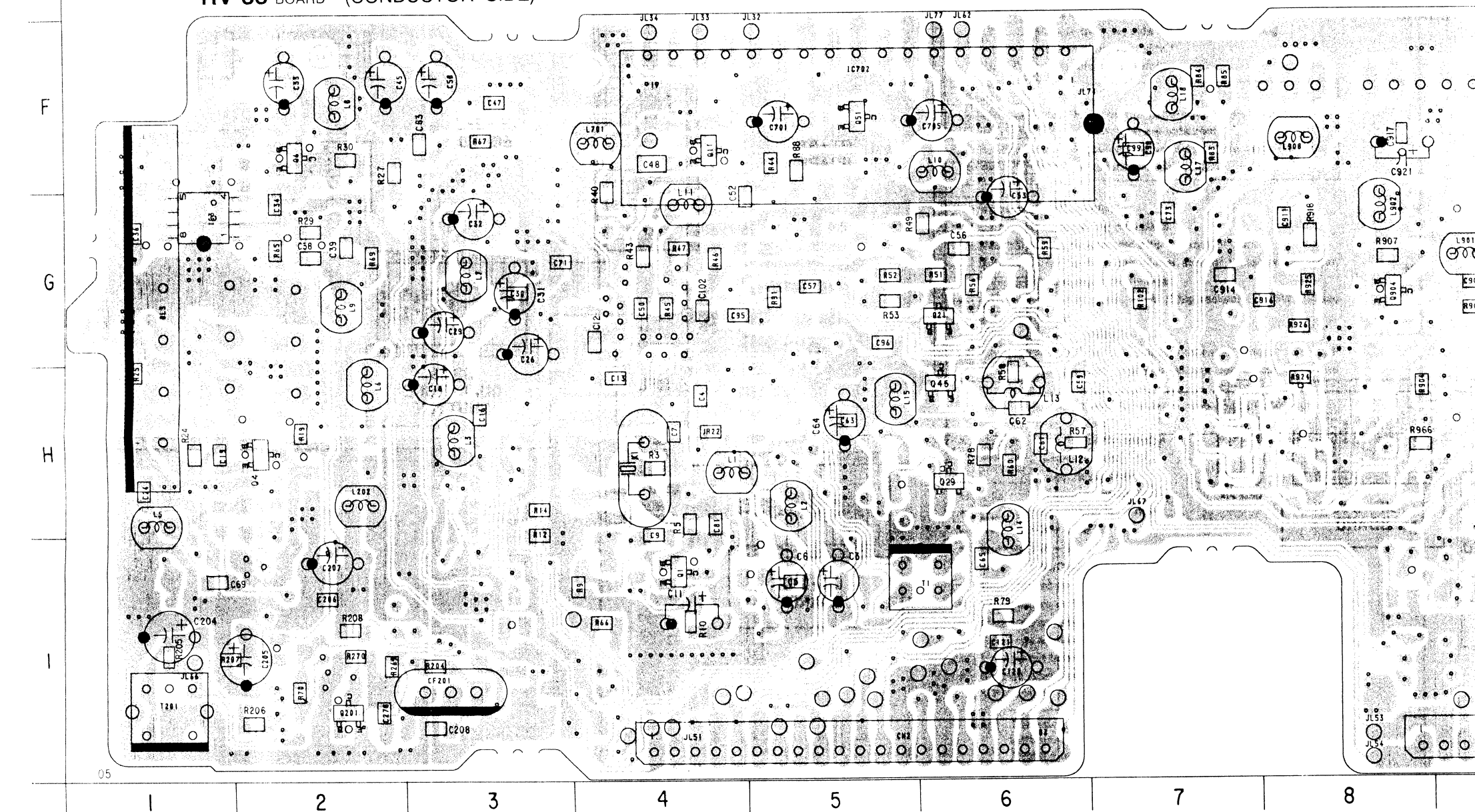
Ref. No.: RV-33 Board: 1,000 series

- There is no indication for destination in the printed wiring board diagram.

RV-33 BOARD (COMPONENT SIDE)



RV-33 BOARD (CONDUCTOR SIDE)



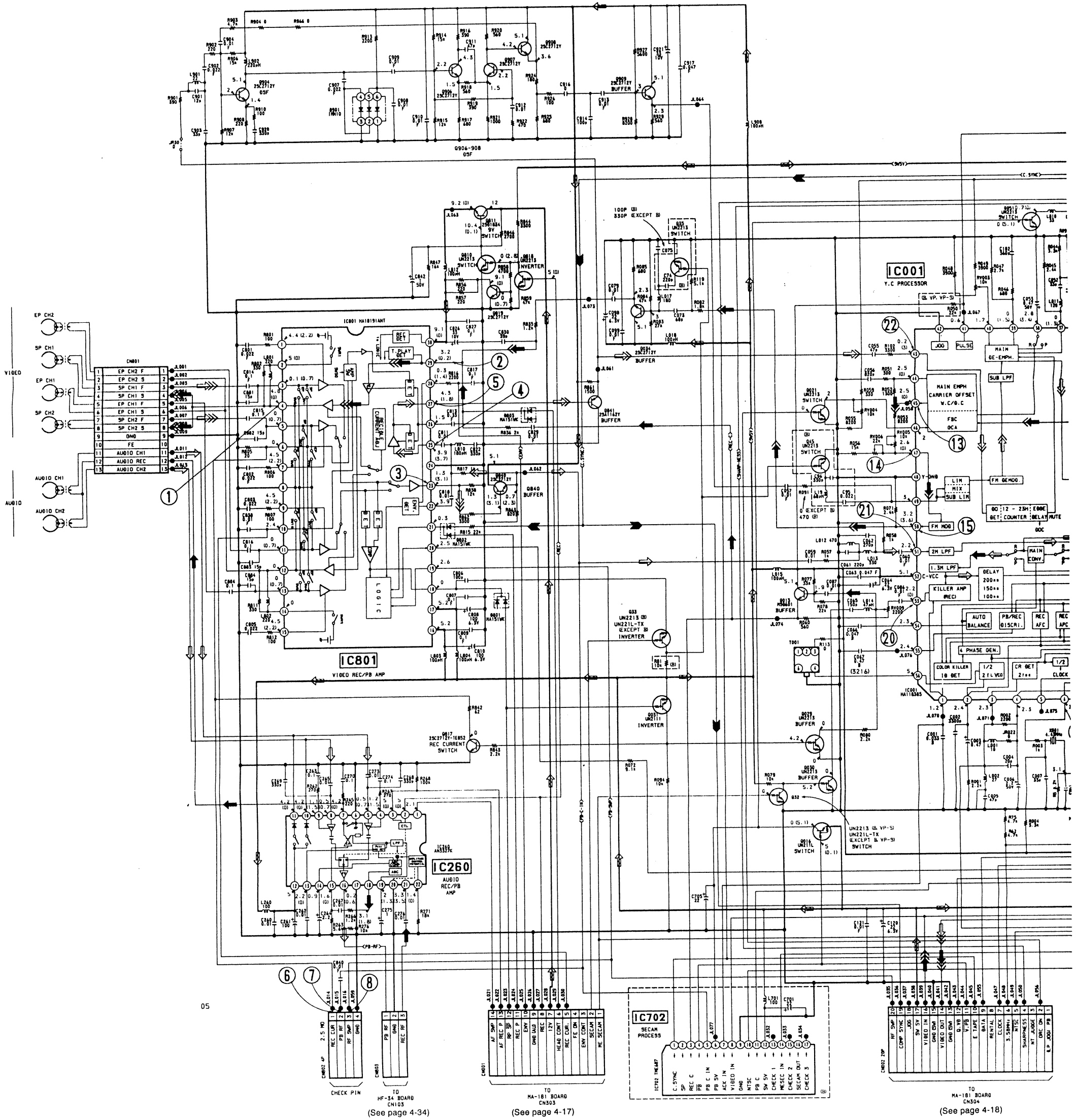
RV-33 (HEAD AMP, VIDEO) SCHEMATIC DIAGRAM
- Ref. No.: RV-33 Board; 1,000 series -

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	➡	➡➡	➡➡➡	➡

	REC	REC/PB	PB
Drum speed servo		➡	
Drum phase servo		➡➡	
Drum servo (speed and phase)		➡➡➡	
Capstan speed servo		➡	
Capstan phase servo	➡➡	➡➡	➡➡
Capstan servo (speed and phase)		➡➡➡	
Ref. signal	➡	➡	➡

No mark : COM1
() : PB
* : Impos

RV-33 BOARD



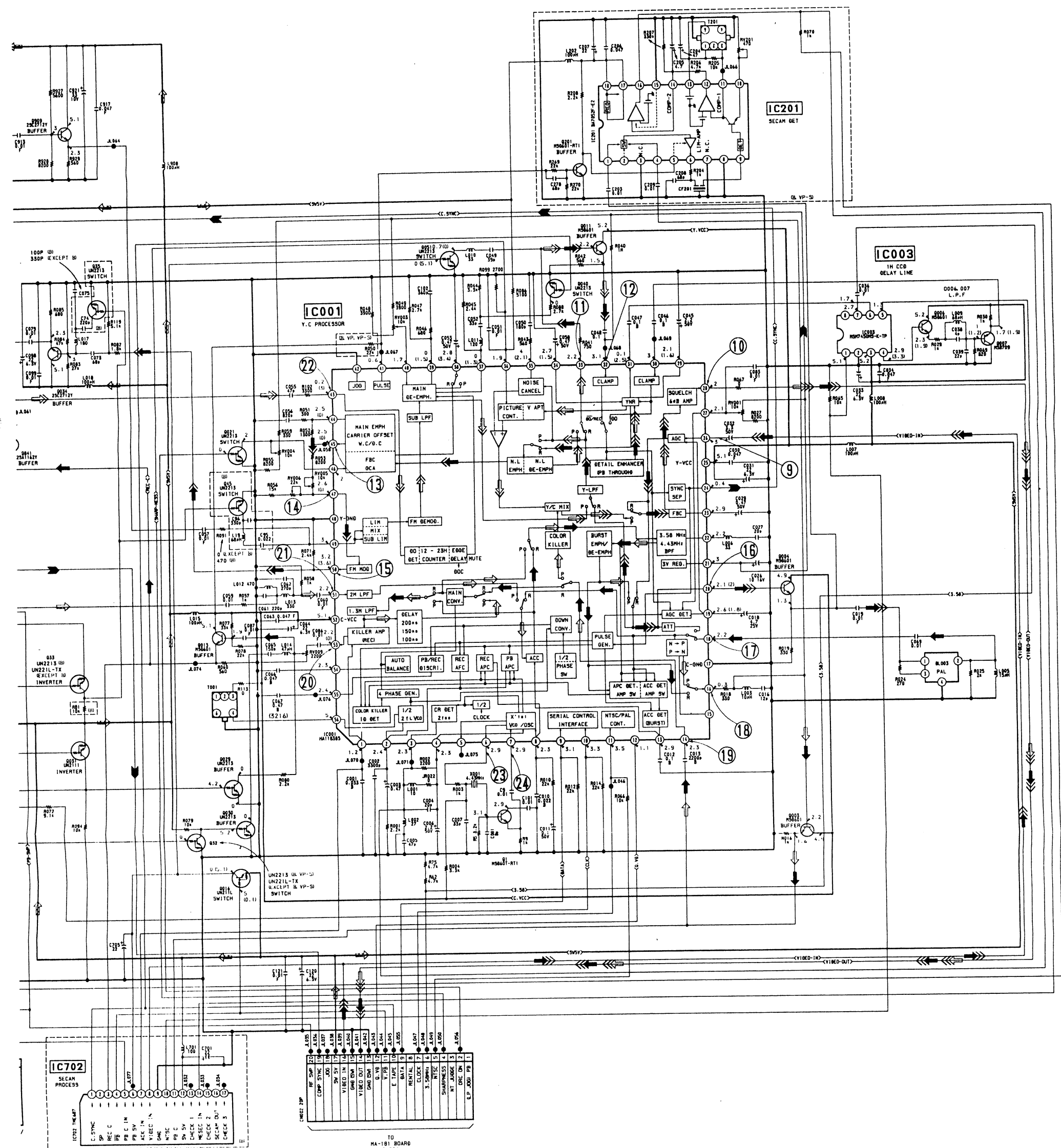
- **Signal path**

Signal pattern	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo (speed and phase)		▶▶▶	
Capstan speed servo		▶	
Capstan phase servo	▶▶	▶▶	▶▶▶
Capstan servo (speed and phase)		▶▶▶	
Ref. signal	▶▶	▶	▶▶

No mark : COMMON (REC)

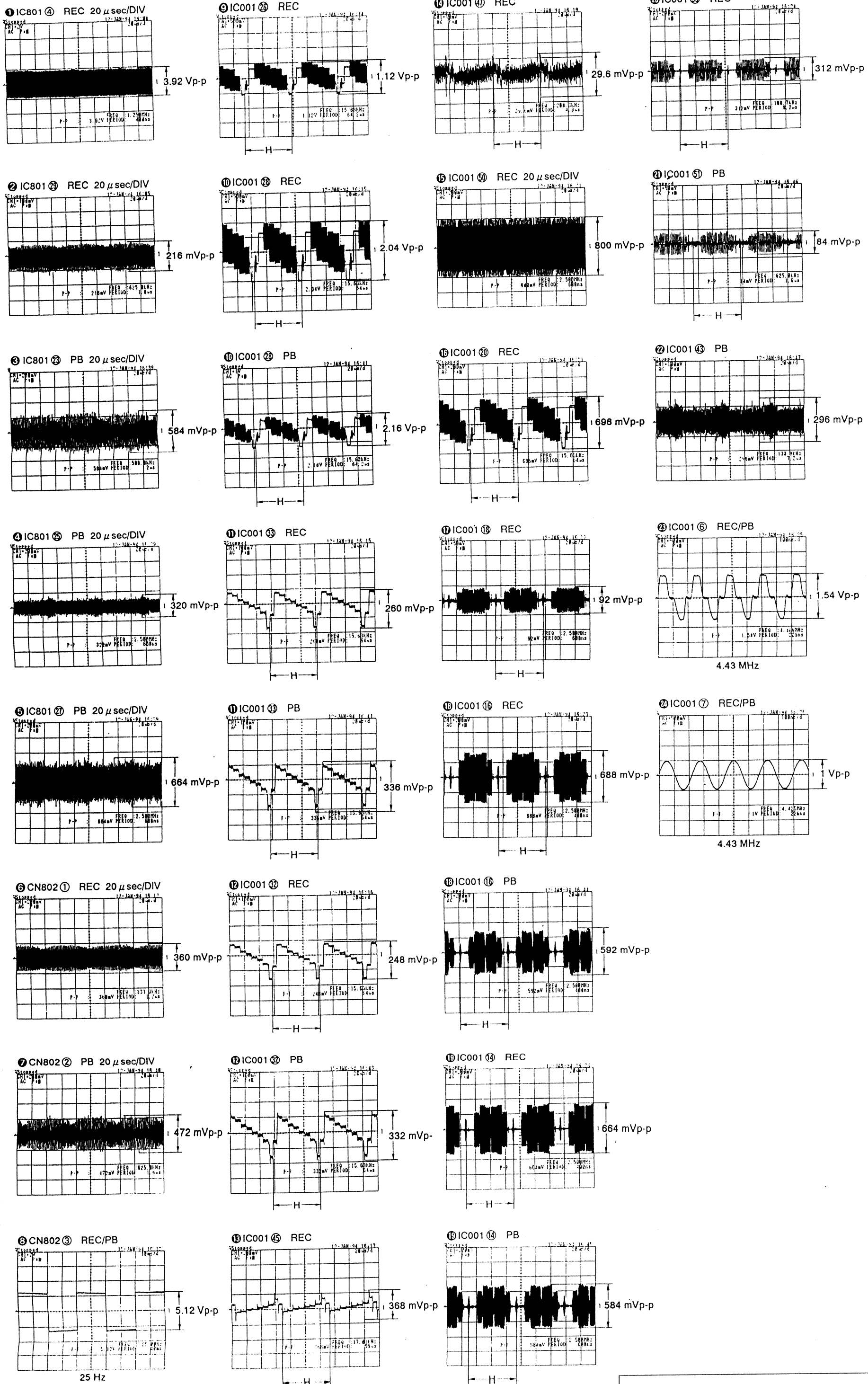
() : PB

* : Impossible to measure the voltage at the marked points.



TO
MA-181 BOARD
CN304
(See page 4-18)

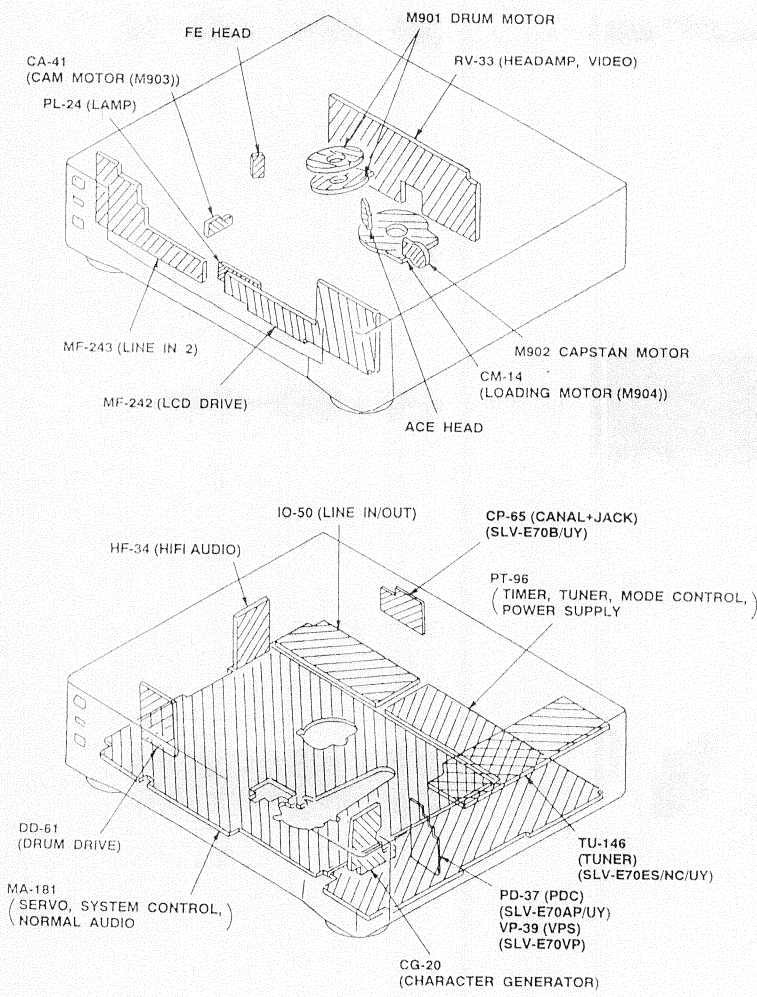
RV-33 BOARD



SLV-E70AP/B/ES/IT/NC/UY/VP

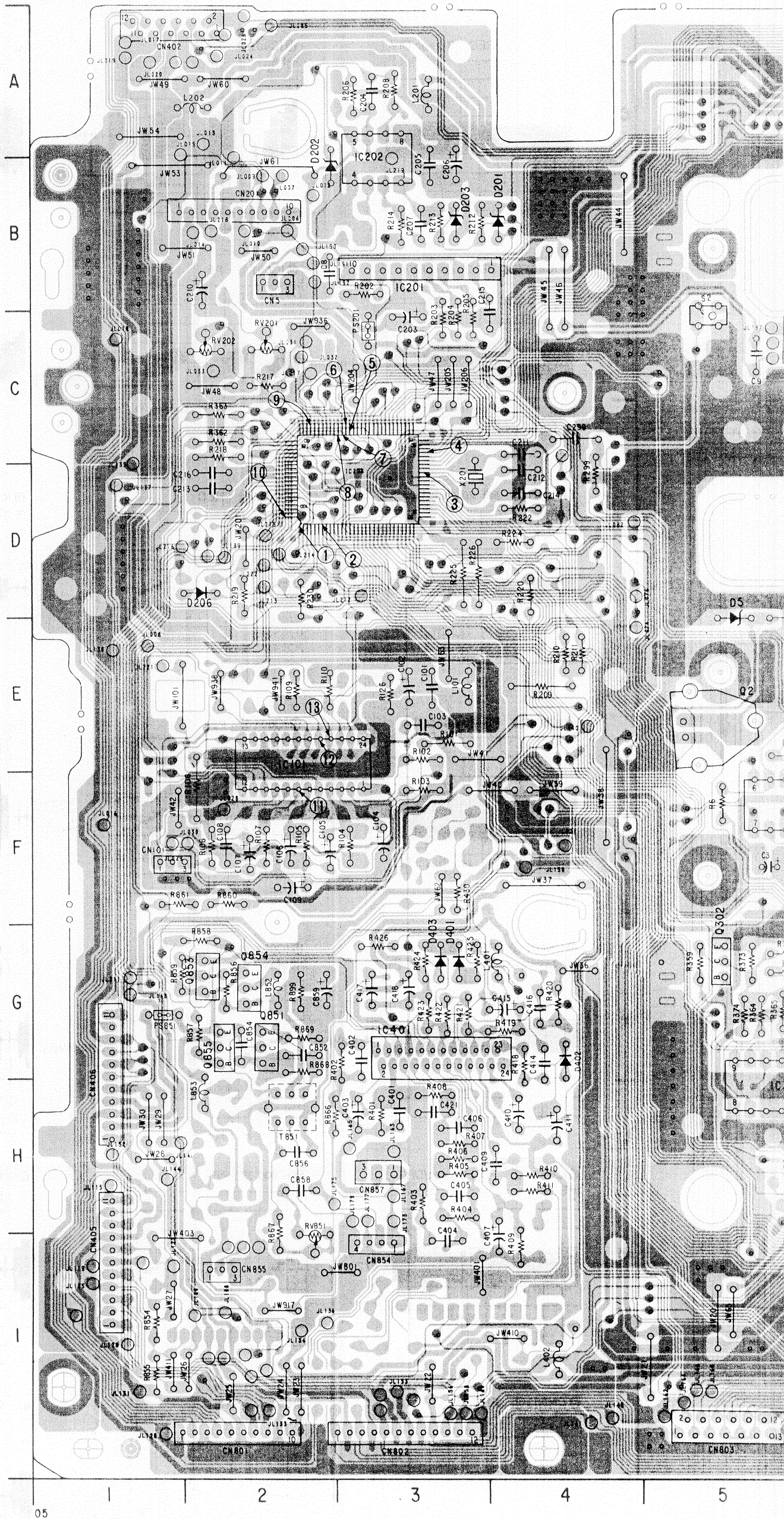
MA-181 (SERVO, SYSTEM CONTROL, NORMAL AUDIO), MF-243 (LINE IN 2), DD-61 (DRUM DRIVE) PRINTED WIRING BOARDS

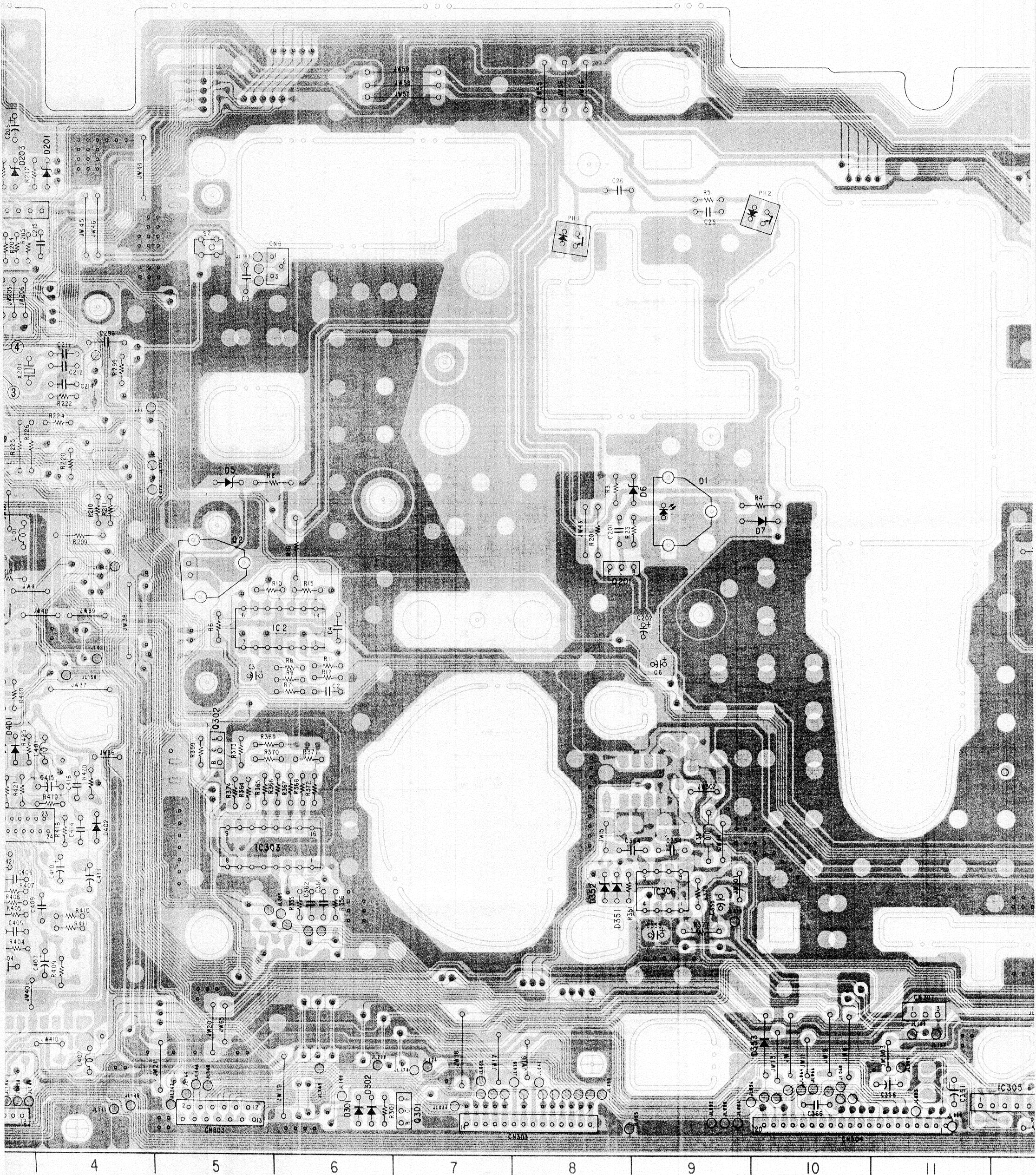
— Ref. No.: MA-181 and DD-61 Boards; 2,000 series, MF-243 Board; 5,000 series —

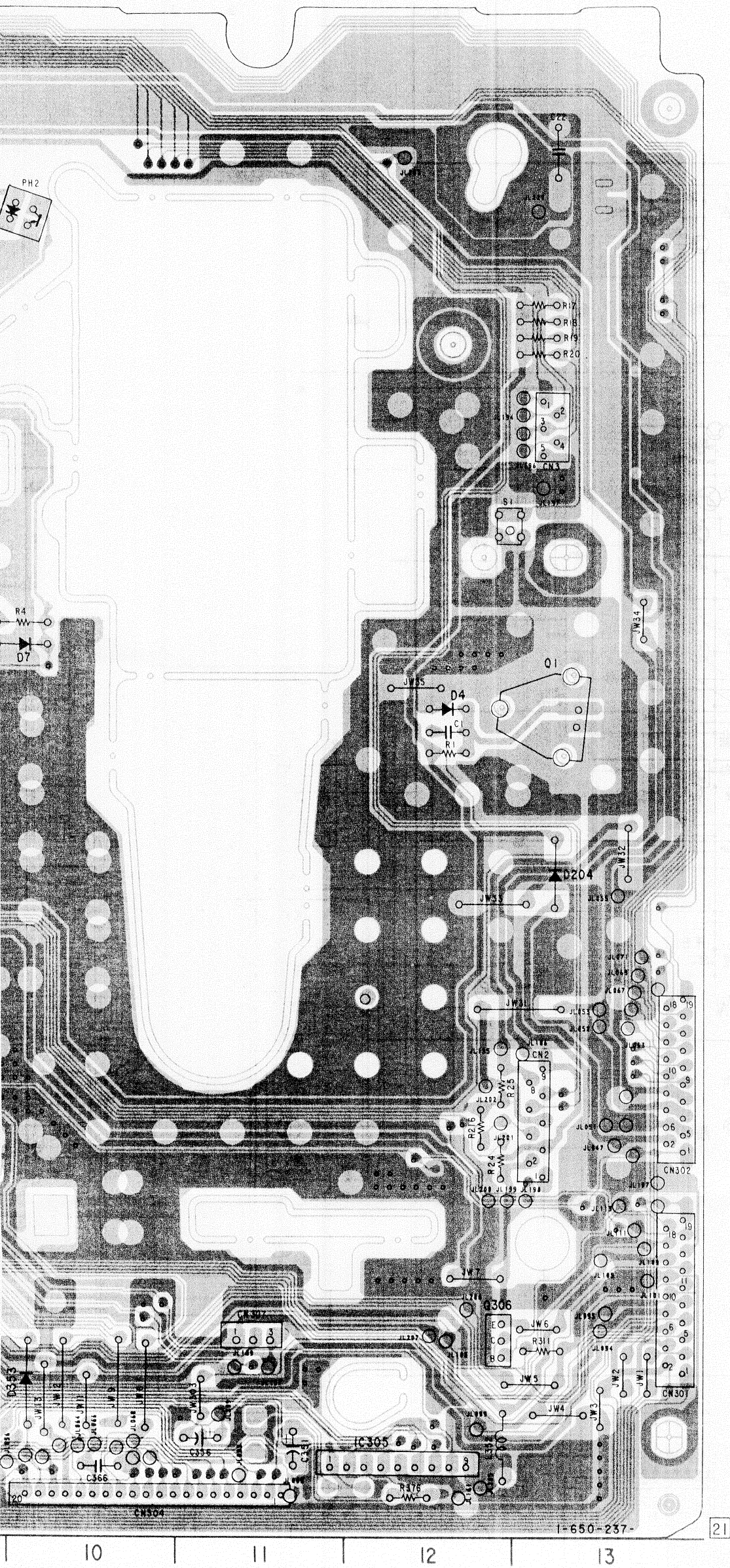


• There is no indication for destination in the printed wiring board diagram.

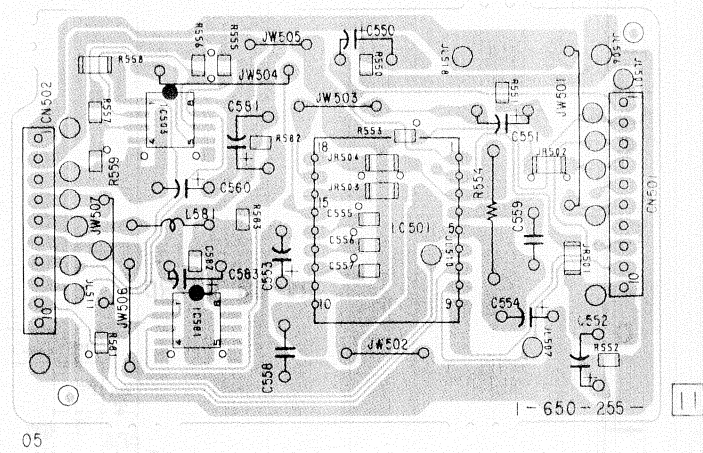
MA-181 BOARD



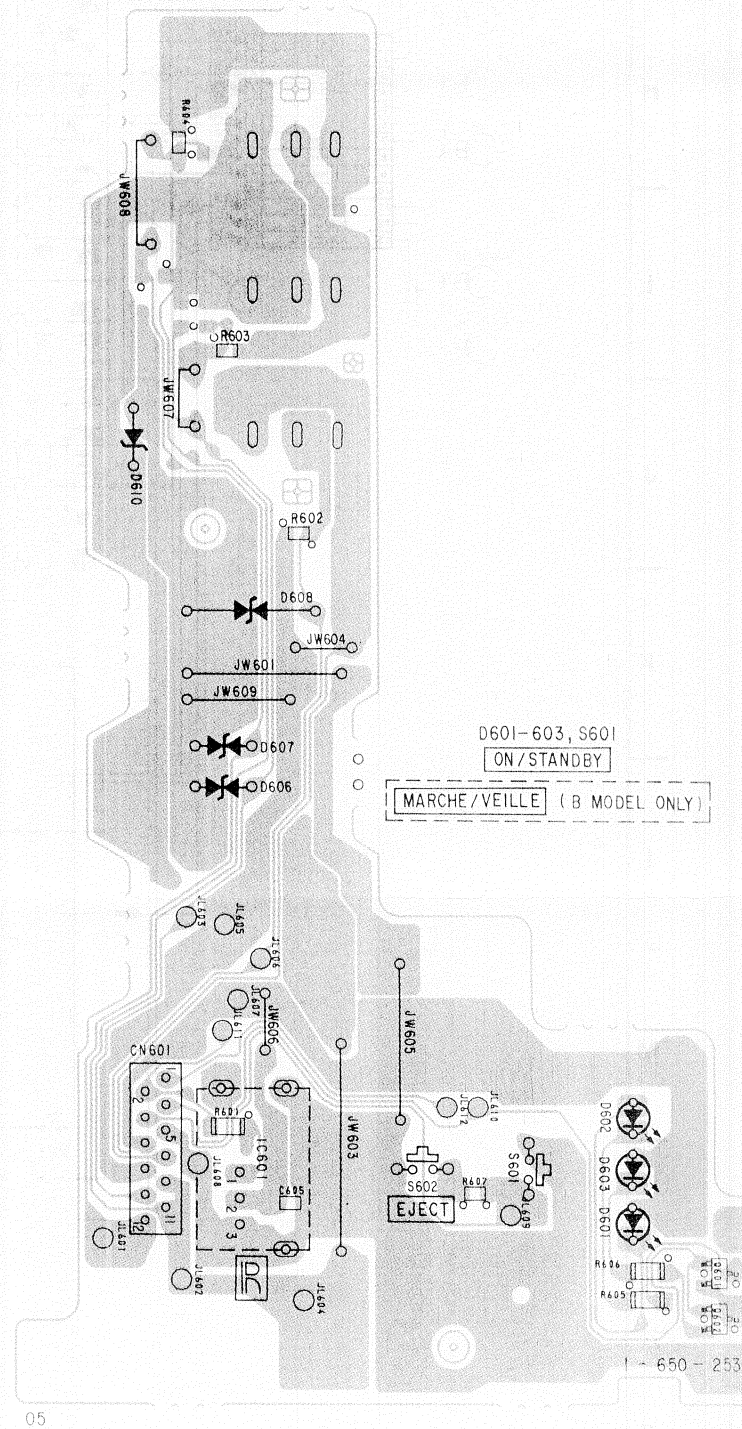


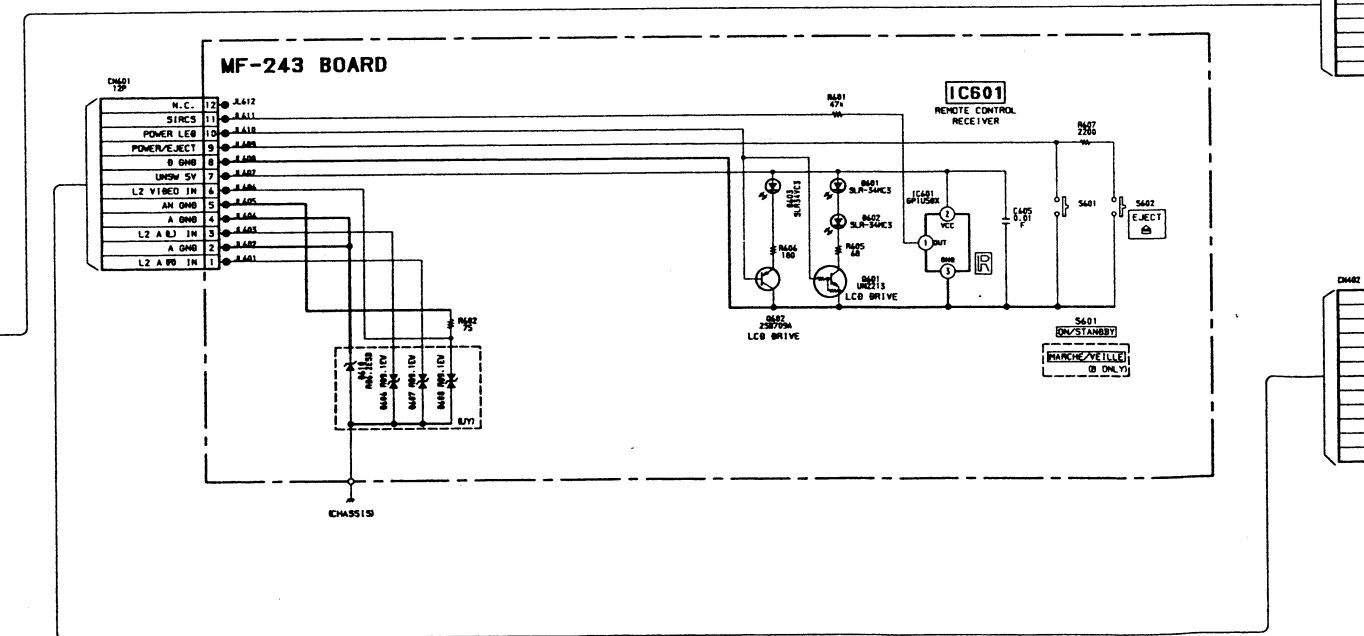
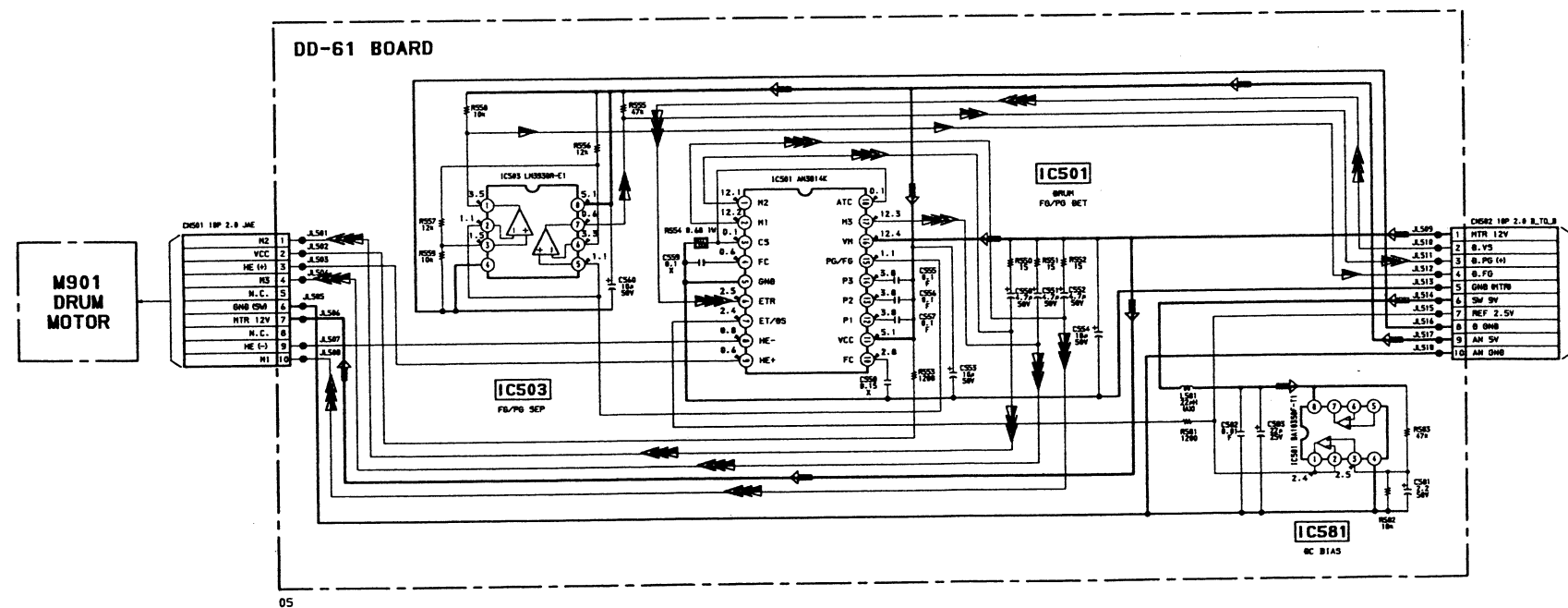
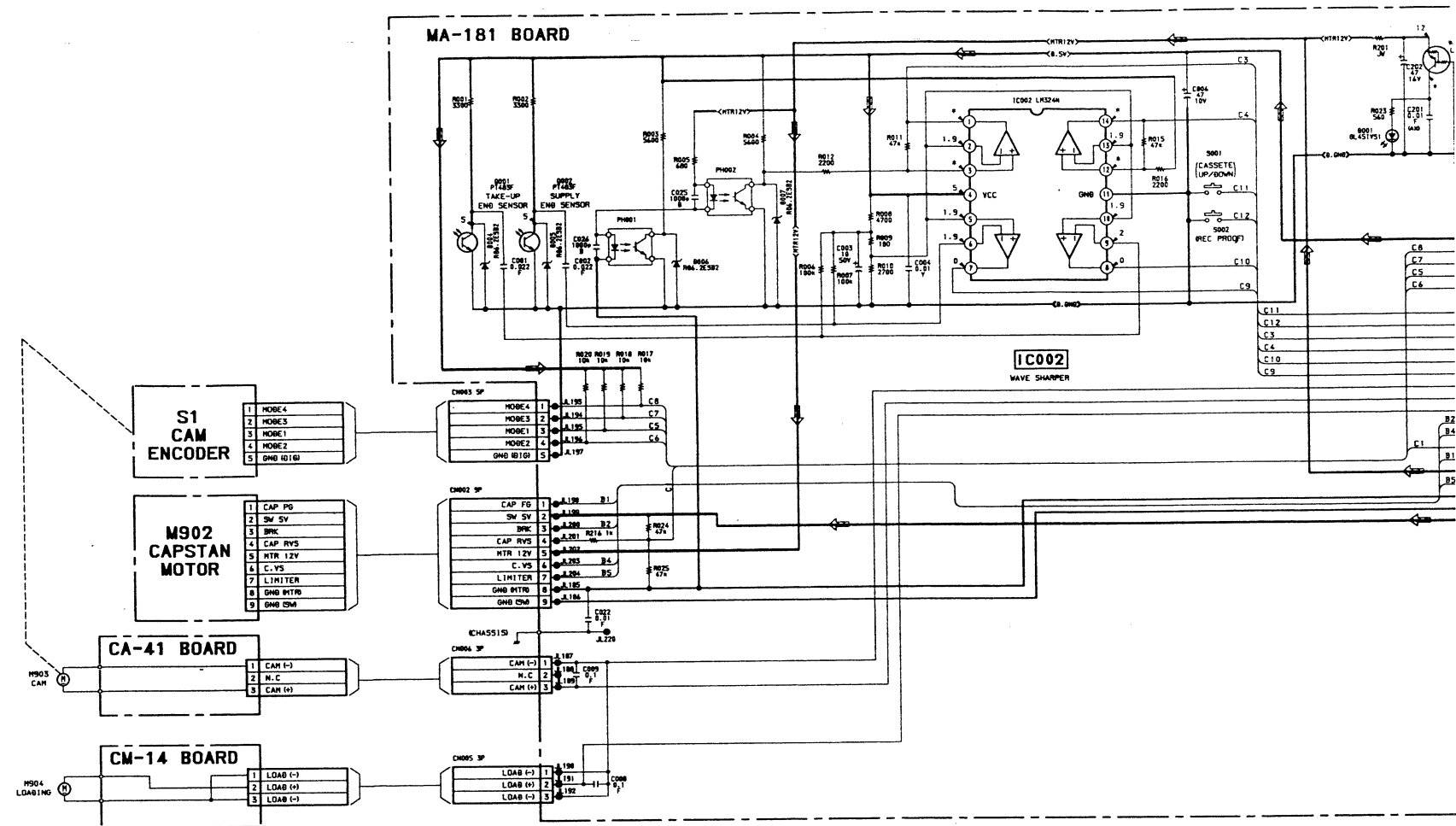


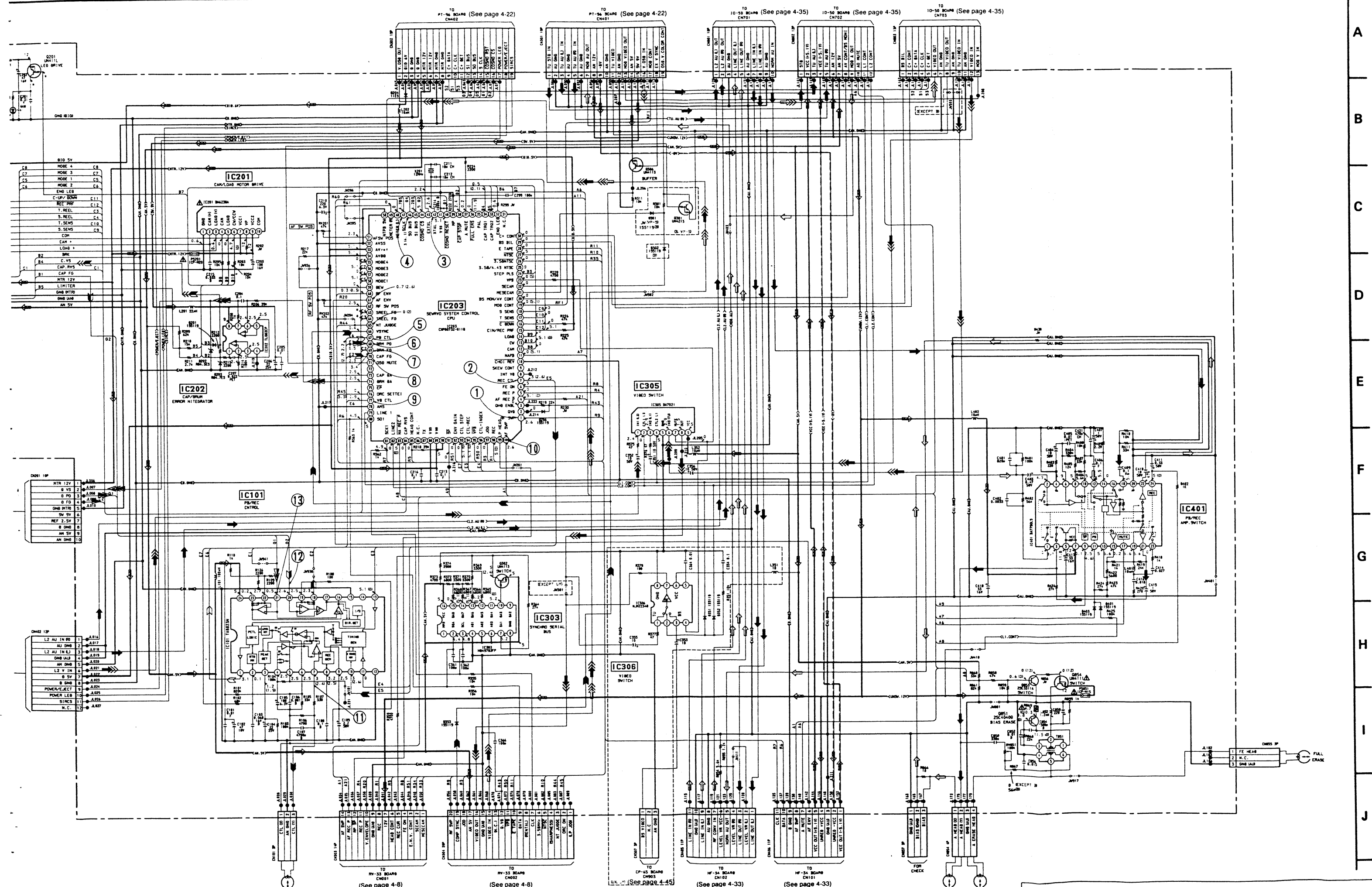
DD-61 BOARD



MF-243 BOARD



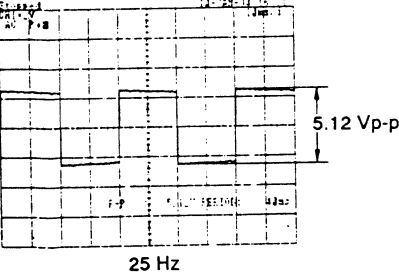




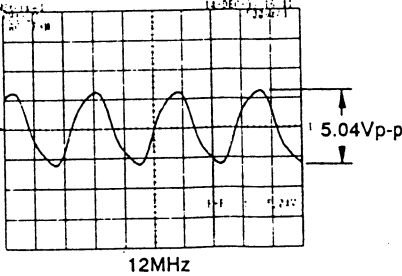
MA-181 (SERVO, SYSTEM CONTROL, NORMAL AUDIO), MF-243 (LINE IN 2), DD-61 (DRUM DRIVE) SCHEMATIC DIAGRAM
- Ref. No.: MA-181 and DD-61 Boards; 2,000 series, MF-243 Board; 5,000 series -

MA-181 BOARD

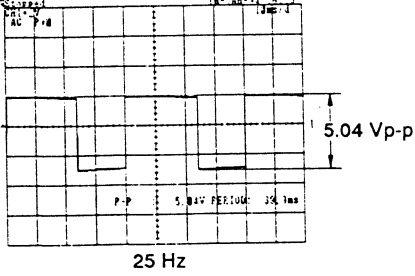
① IC203 ① REC/PB



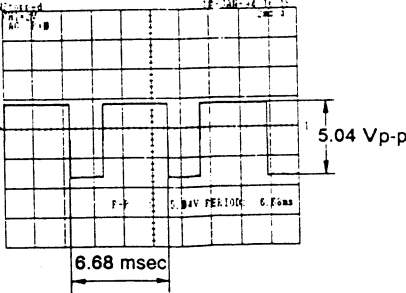
③ IC203 ④ REC/PB



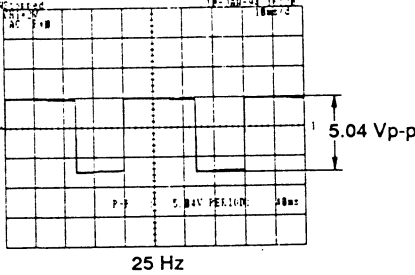
⑤ IC203 ⑥ PB



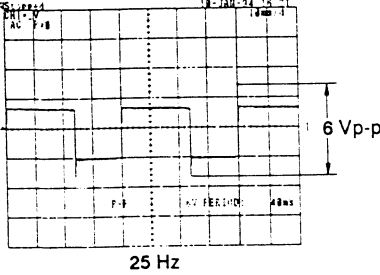
⑦ IC203 ⑧ REC/PB



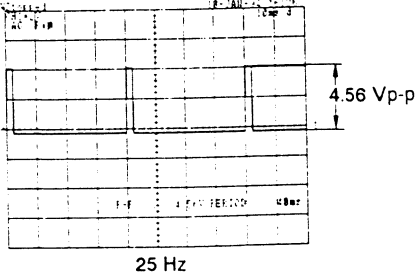
⑨ IC203 ⑩ REC/PB



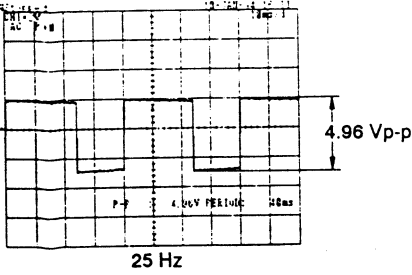
⑪ IC101 ⑦ REC



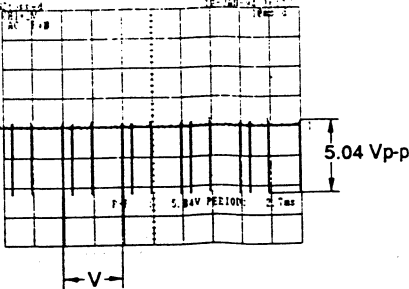
⑫ IC101 ⑩ REC/PB



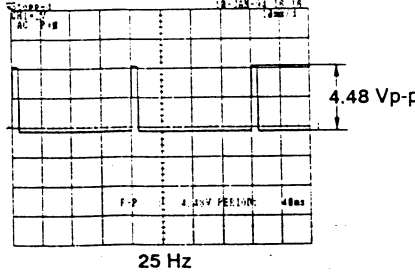
② IC203 ⑦ REC



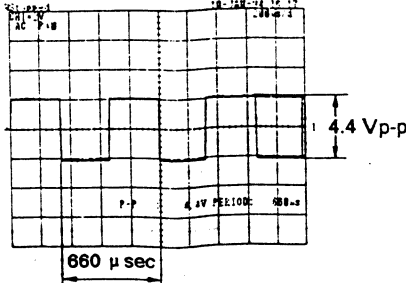
④ IC203 ④ REC/PB



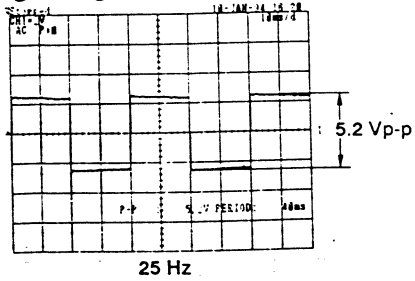
⑥ IC203 ⑥ REC/PB



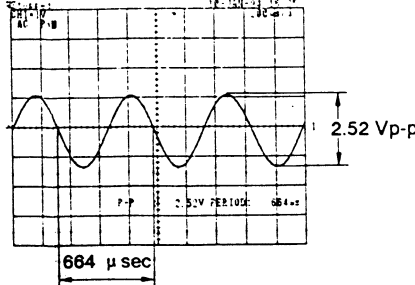
⑧ IC203 ⑩ REC/PB



⑩ IC203 ⑩ REC/PB

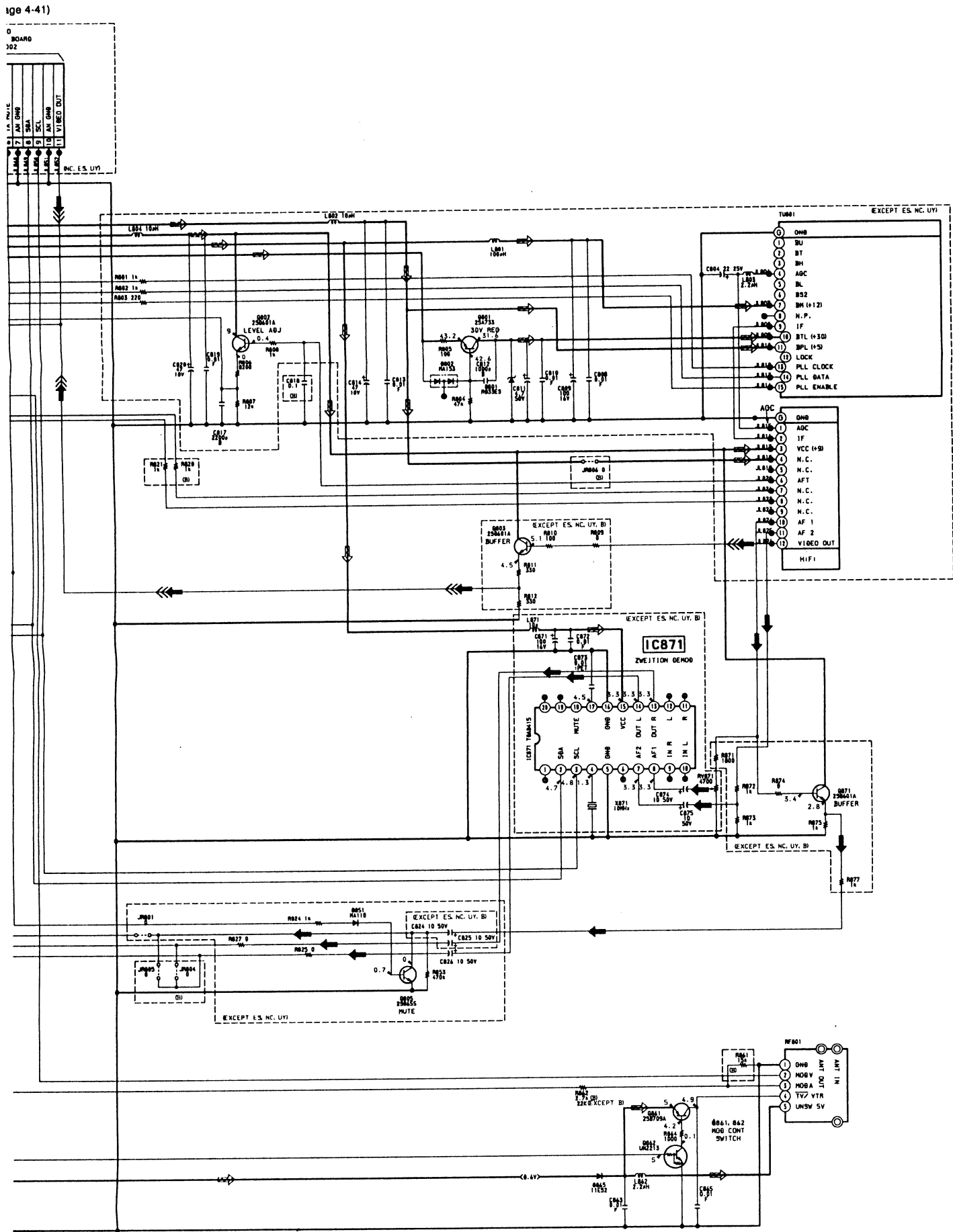


⑫ IC101 ⑩ REC/PB



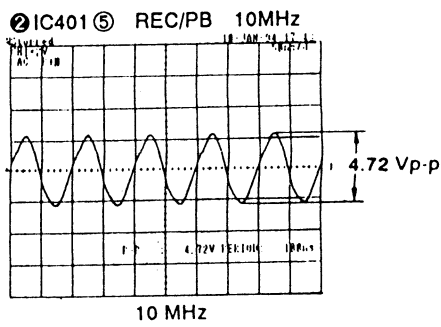
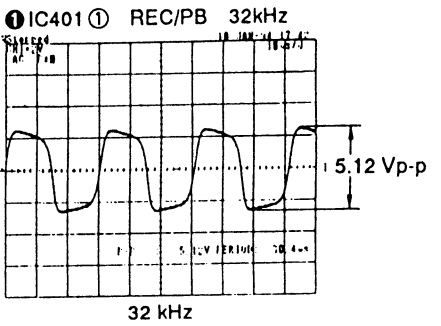
- Ref. No.: PT-96 Board; 3,000 series -





Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

PT-96 BOARD



No mark : COMMON (REC)
() : PB
* : Impossible to measure the voltage at the marked points

• Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	➡	➡➡	➡➡➡	➡

— Ref. No.: PT-96 Board; 3,000 series —

- ## PT-96 BOARD

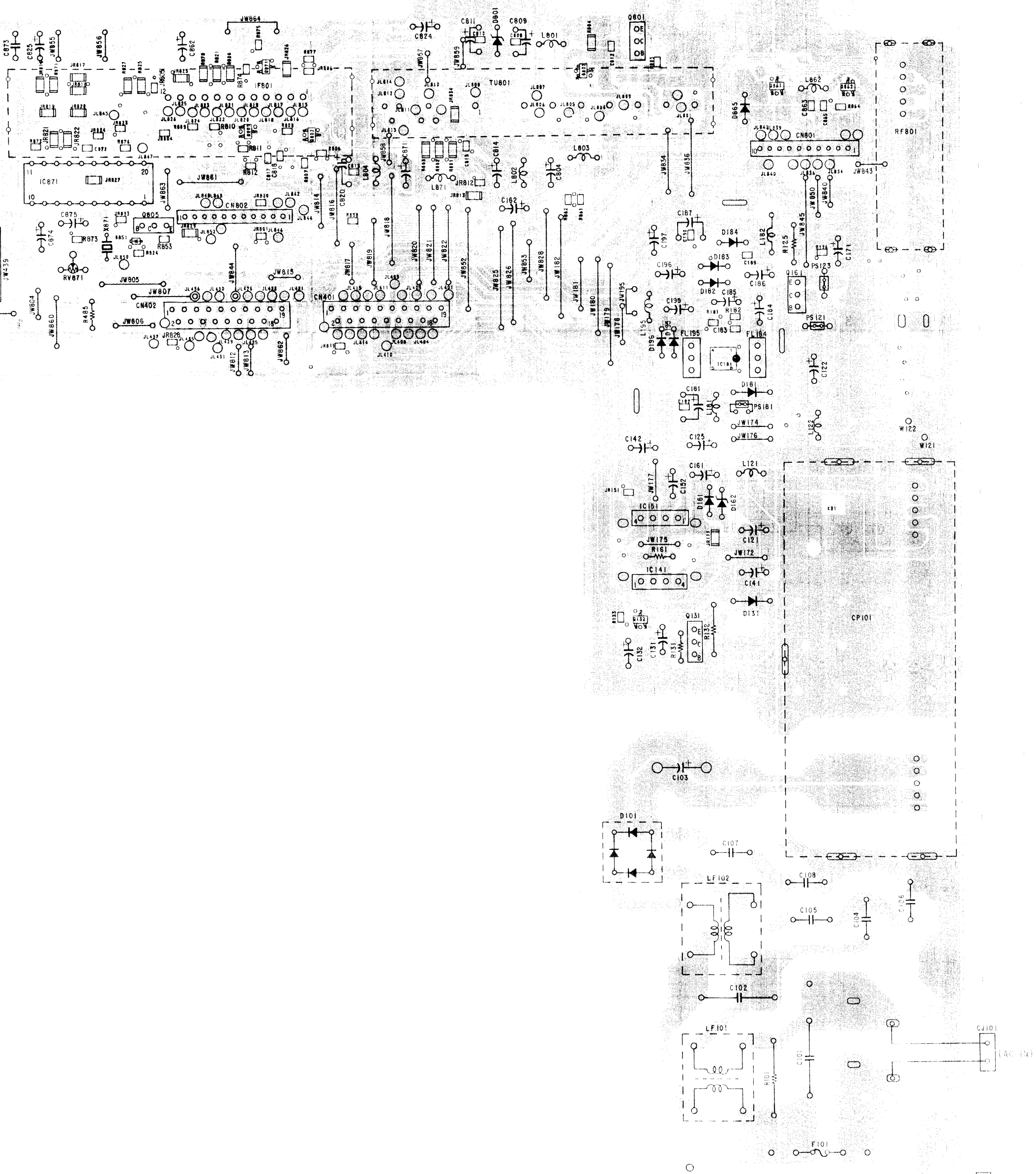


CN401	C-8
CN402	C-7
CN403	B-1
CN404	B-4
CN405	C-2
CN801	B-12
CN802	B-7

D101	G-11
D131	F-12
D161	E-11
D162	E-11
D181	D-11
D182	C-11
D183	C-11
D184	C-11
D195	C-11
D196	C-11
D403	A-5
D404	B-5
D801	A-10
D802	A-10
D851	C-6
D865	A-12

IC141	E-11
IC151	E-11
IC181	D-11
IC401	B-2
IC402	A-2
IC405	B-5
IC871	B-6

Q131	F-11
Q132	F-11
Q161	C-12
Q451	C-5
Q452	C-4
Q801	A-11
Q802	B-8
Q803	B-8
Q805	B-7
Q861	A-12
Q862	A-12
Q871	A-8

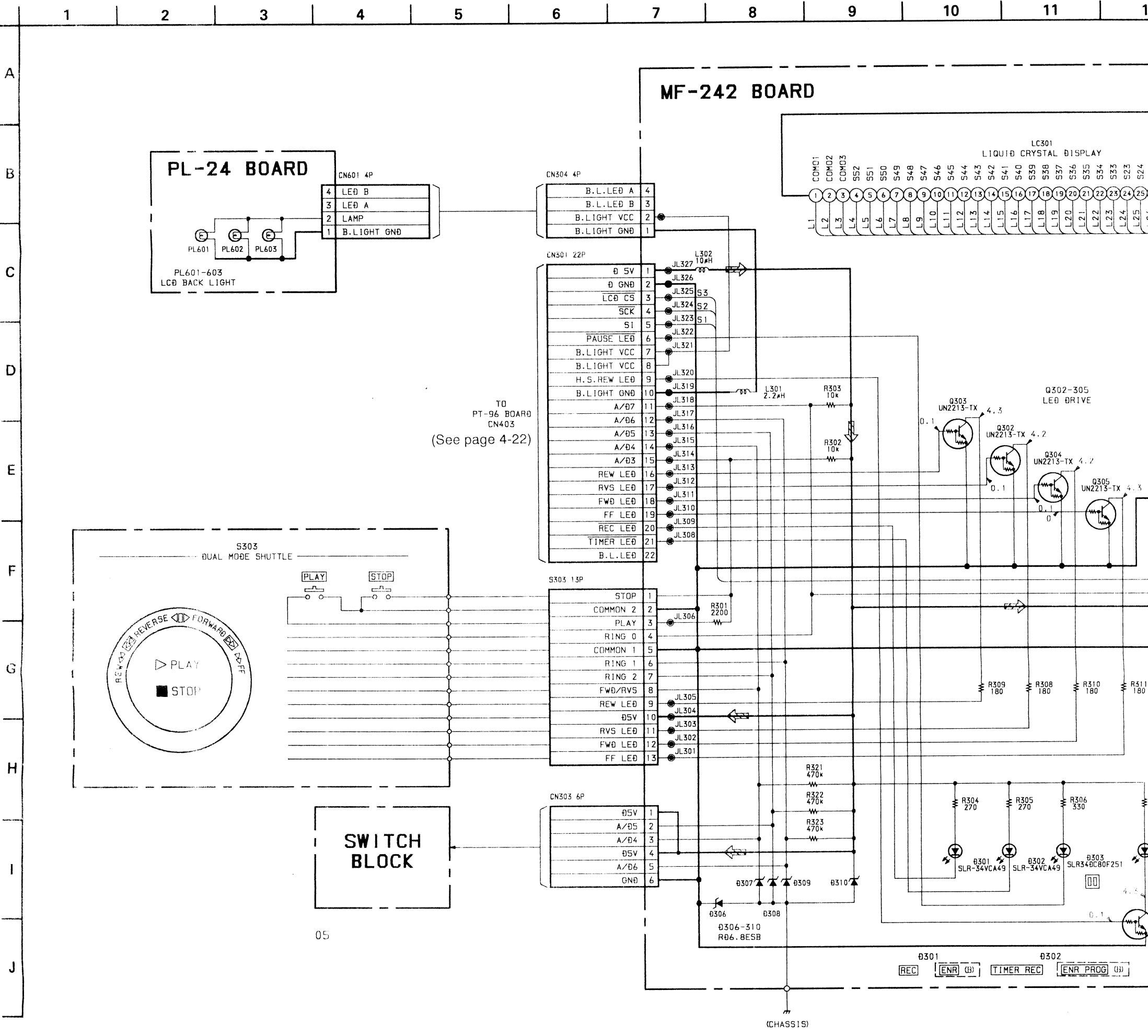
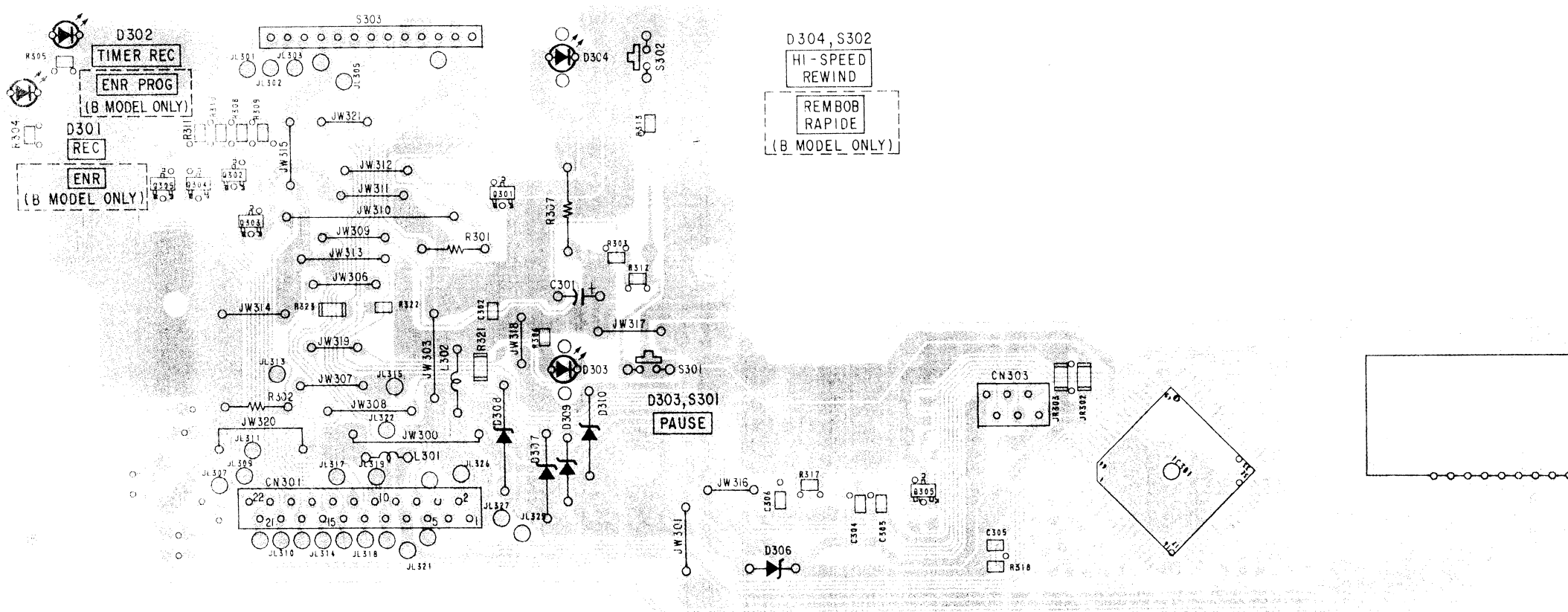


1-050-251-11

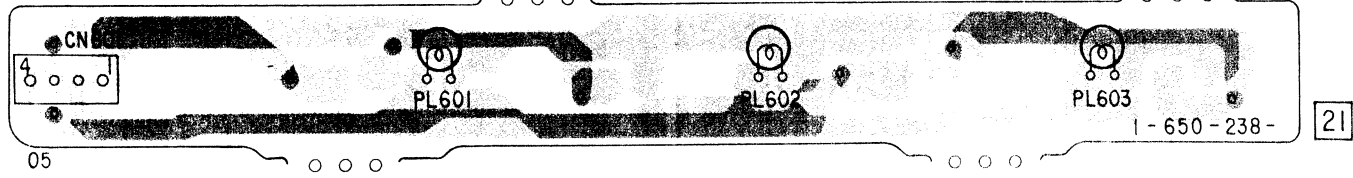
SLV-E70AP/B/ES/IT/NC/UY/VP

MF-242 (LCD DRIVE), PL-24 (LAMP) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM
- Ref. No.: MF-242 and PL-24 Boards; 5,000 series -

MF-242 BOARD



PL-24 BOARD

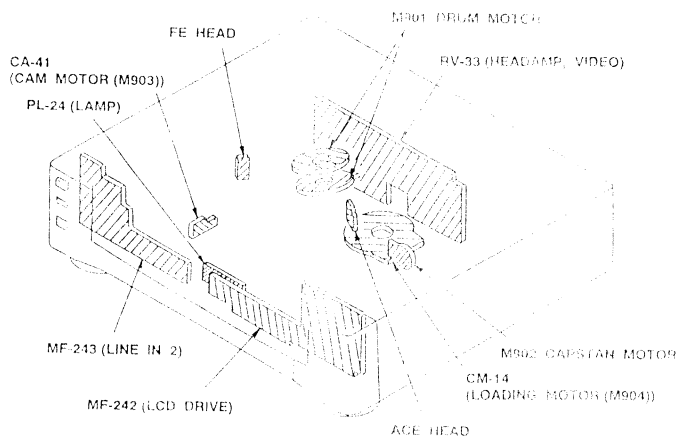
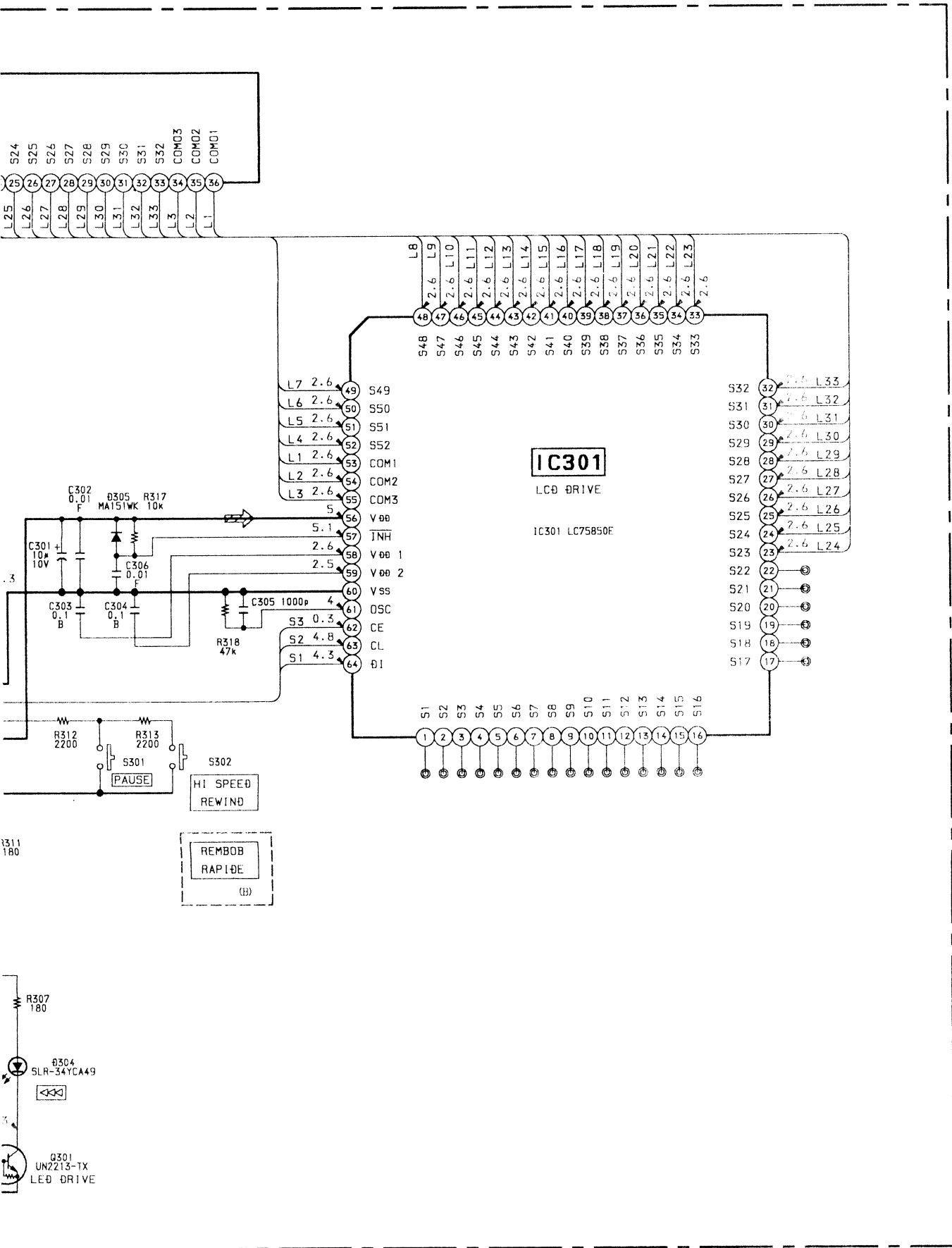


LC301
LIQUID CRYSTAL DISPLAY

CN304
O4 O O O1

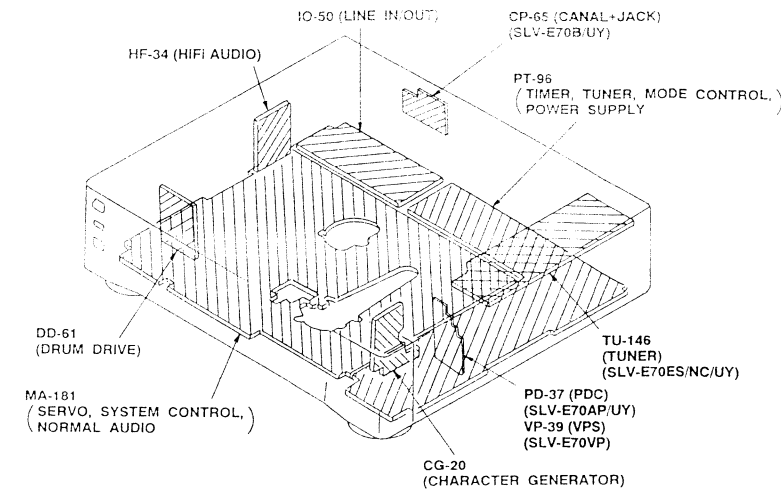
1 - 650 - 252 - 11

12 13 14 15 16 17 18 19

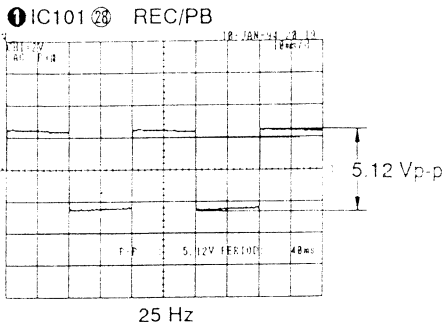


No mark = COMMON (Pin 1)
() = PB

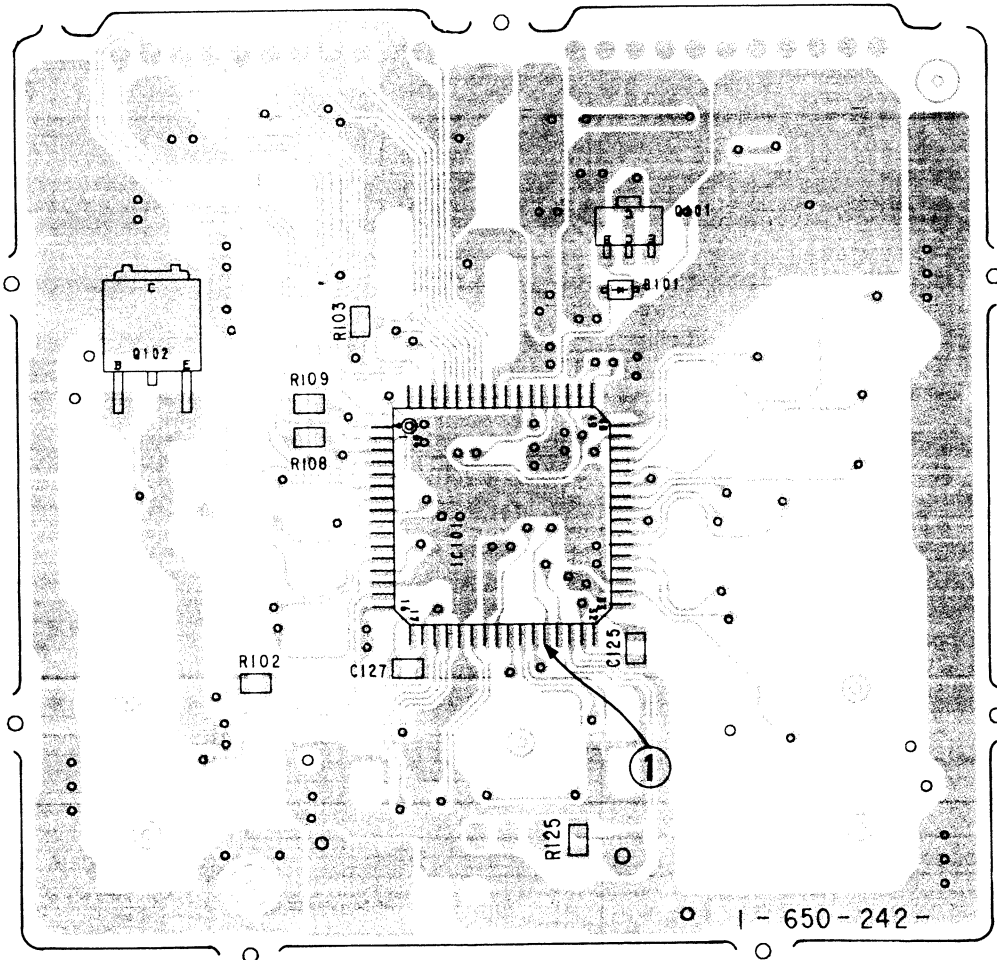
HF-34 (HiFi AUDIO) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
-- Ref. No.: HF-34 Board; 6,000 series --



HF-34 BOARD

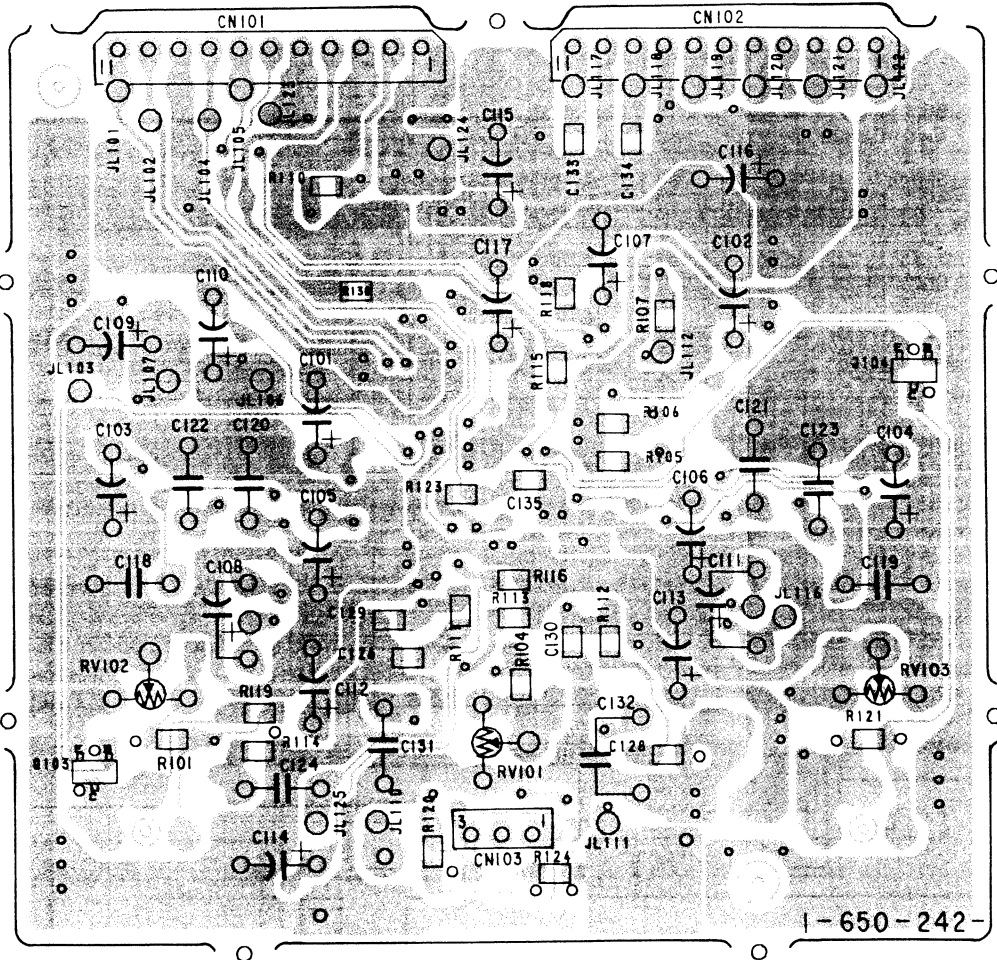


HF-34 BOARD (COMPONENT SIDE)

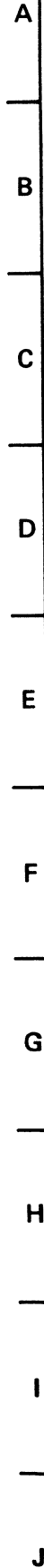


22

HF-34 BOARD (CONDUCTOR SIDE)



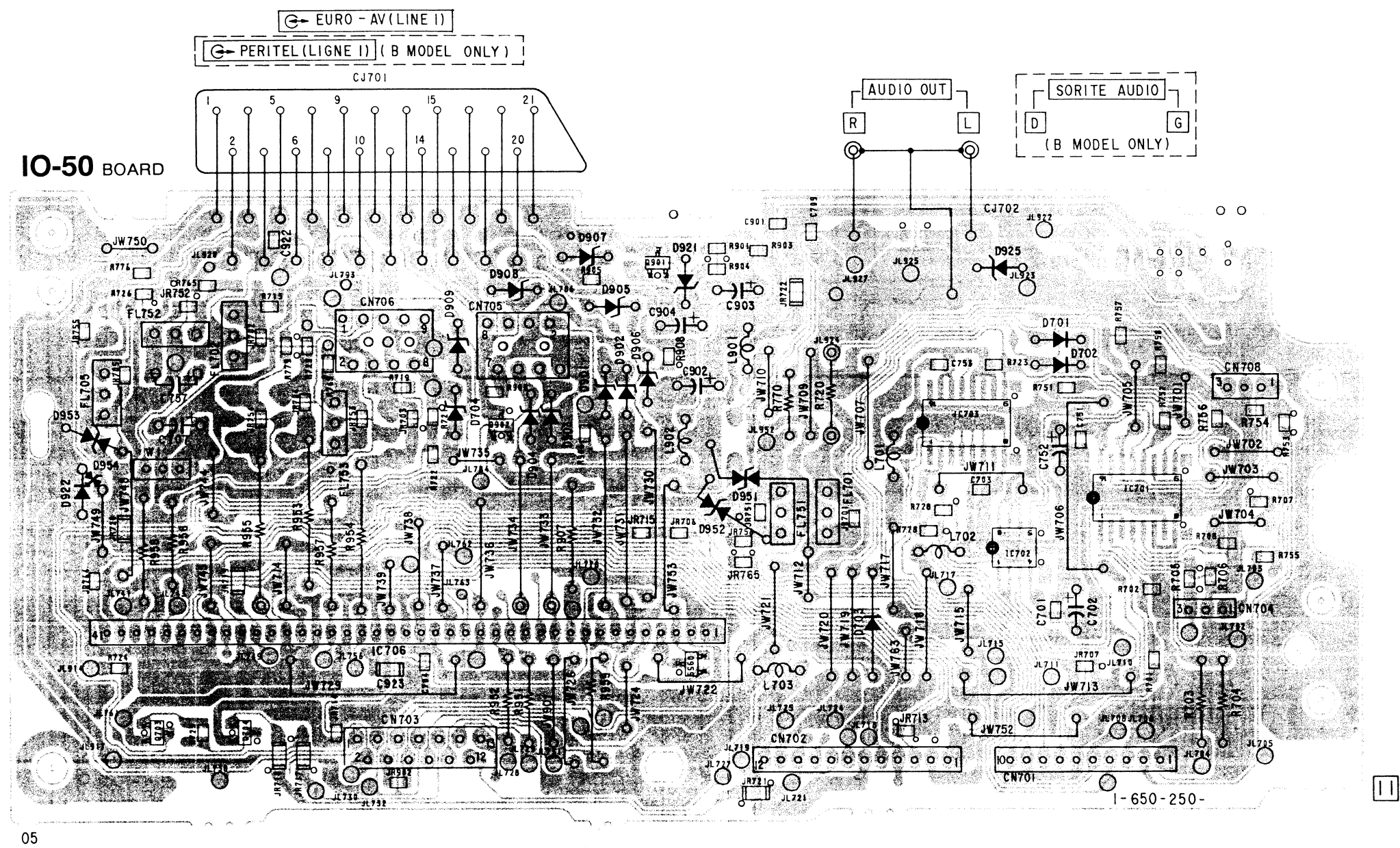
22



— Ref. No.: IO-50 Board; 4,000 series —



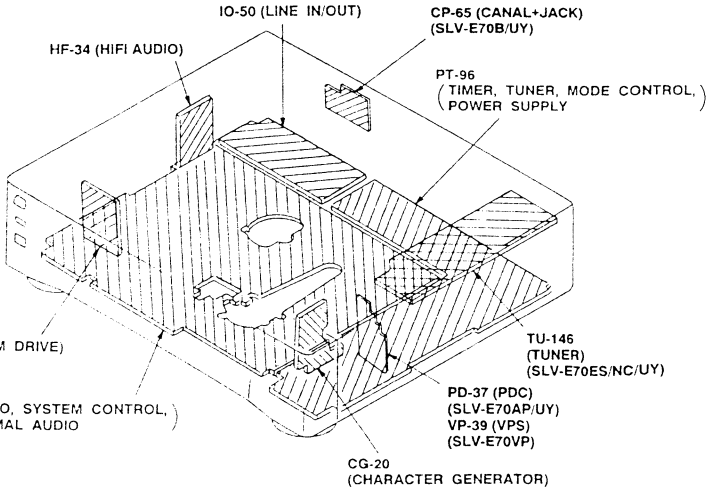
- There is no indication for destination in the printed wiring board diagram.



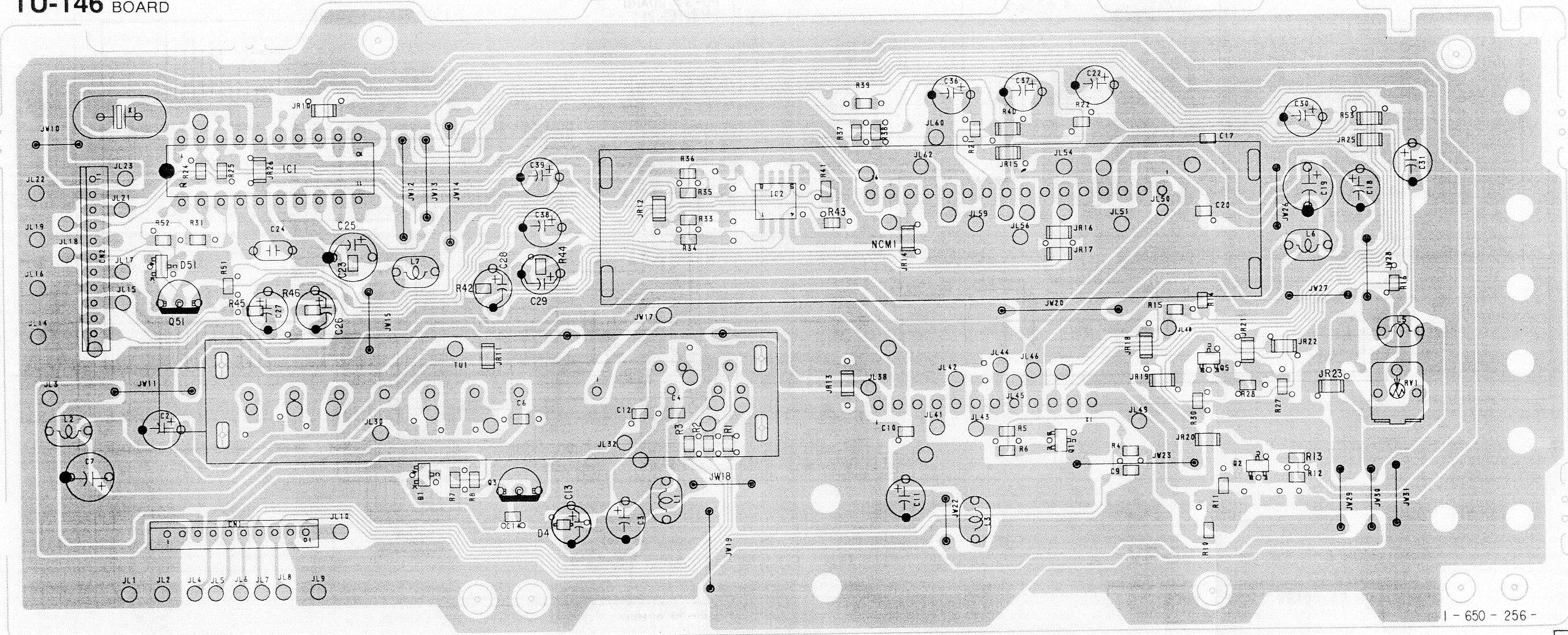
No mark : COMMON (REC)
() : PB

- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB	➡	➡➡	➡➡➡	➡

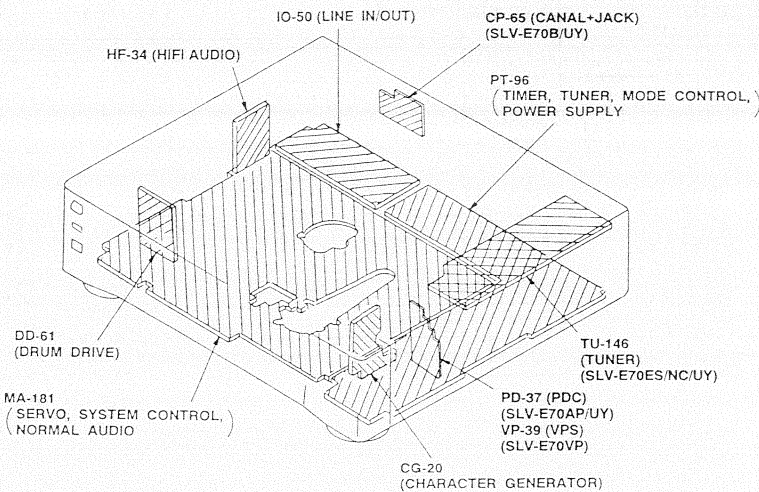


TU-146 BOARD

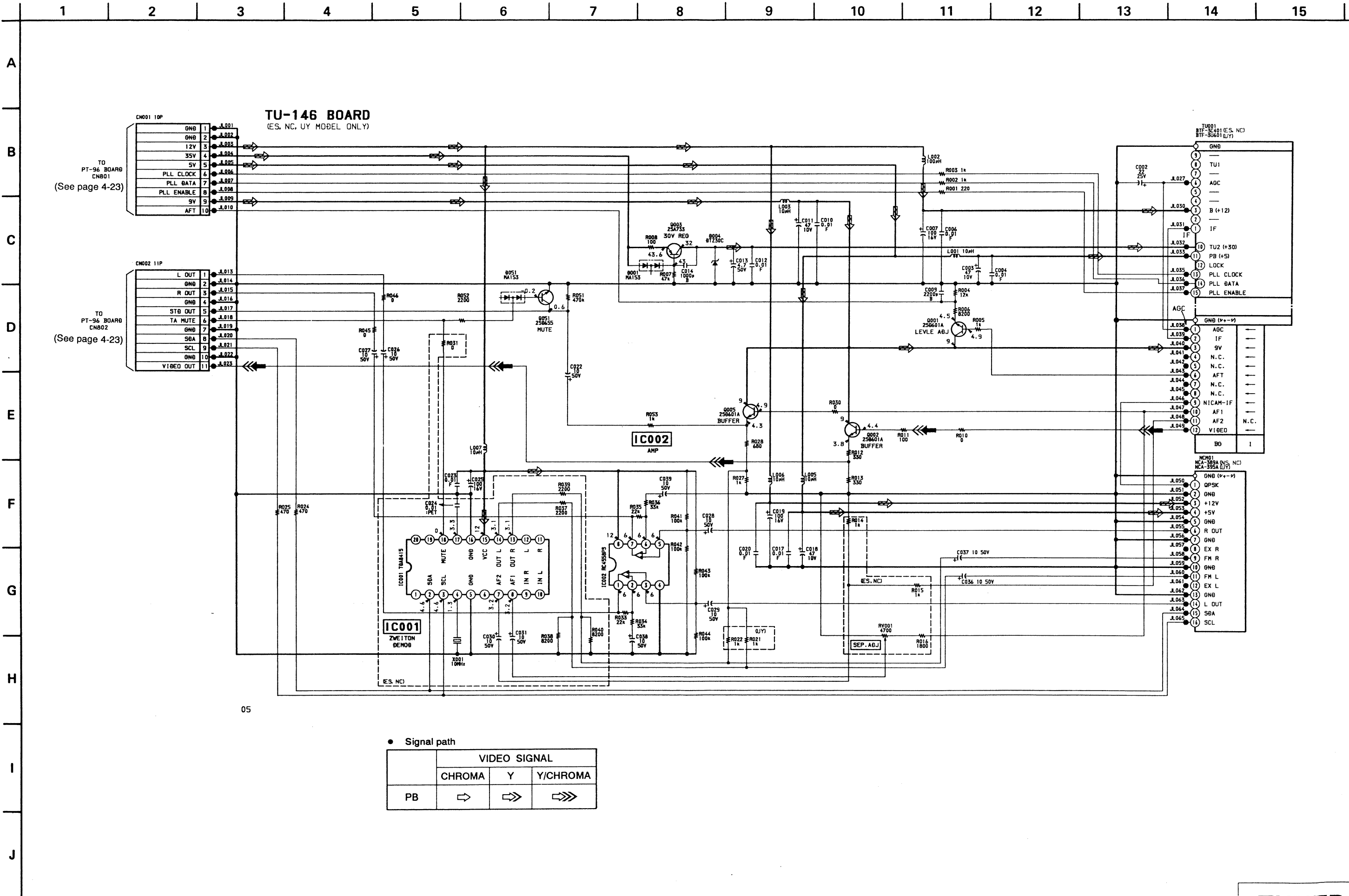


05

11



• There is no indication for destination in the printed wiring board diagram.

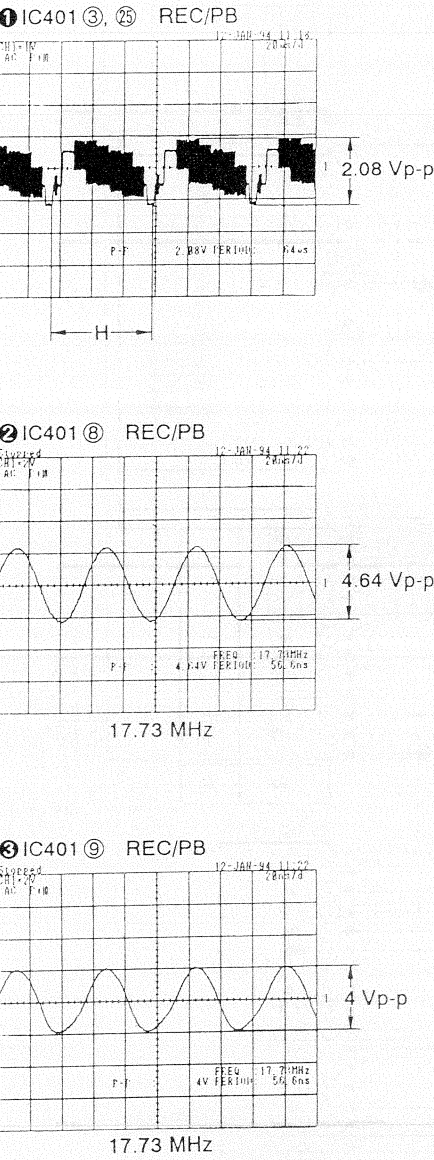


SLV-E70AP/B/ES/IT/NC/UY/VP

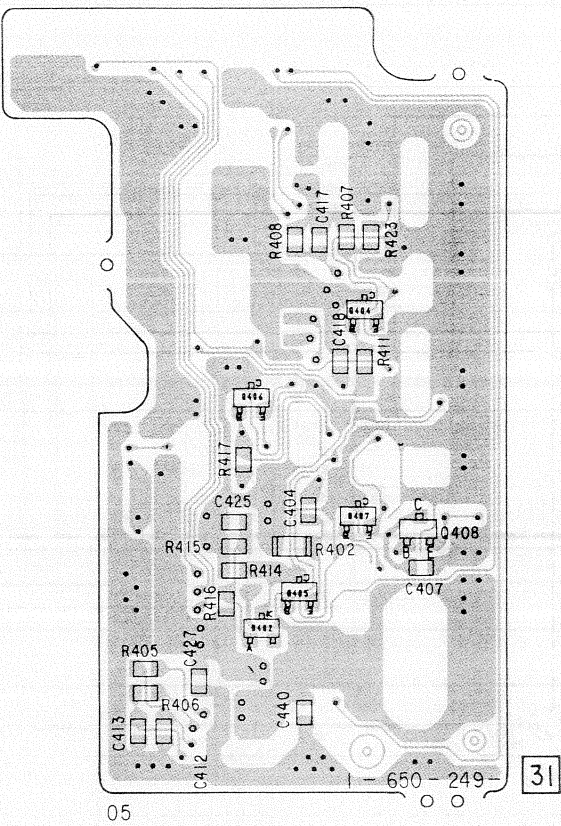
CG-20 (CHARACTER GENERATOR), CP-65 (CANAL + JACK), PD-37 (PDC), VP-39 (VPS) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

— Ref. No.: CG-20 Board; 4,000 series, CP-65, PD-37 and VP-39 Boards; 9,000 series —

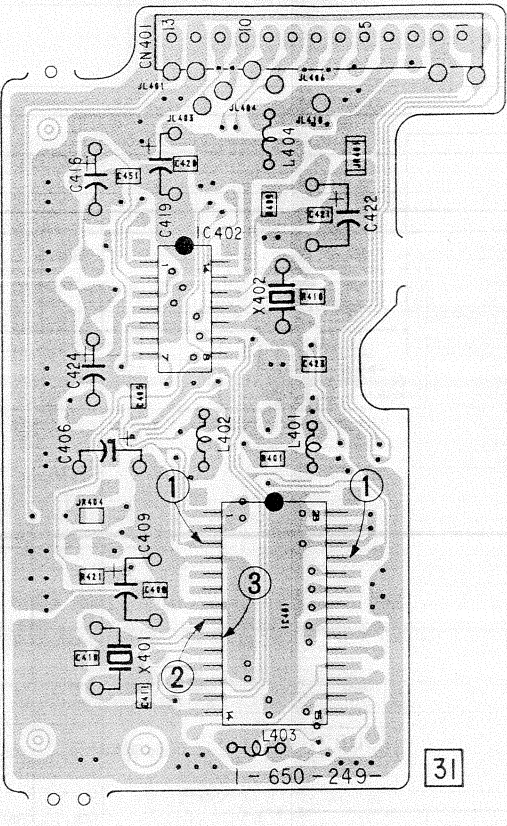
CG-20 BOARD



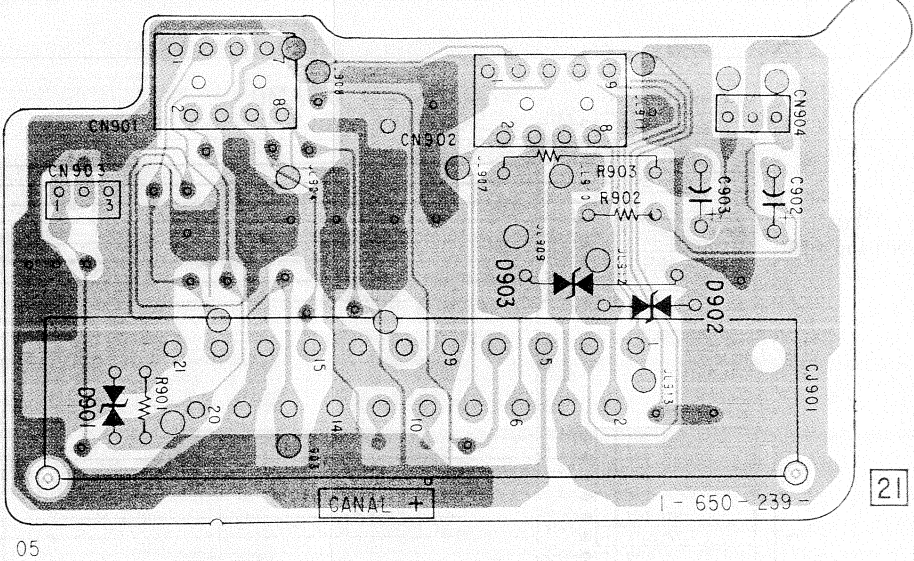
CG-20 BOARD
(COMPONENT SIDE)



CG-20 BOARD
(CONDUCTOR SIDE)

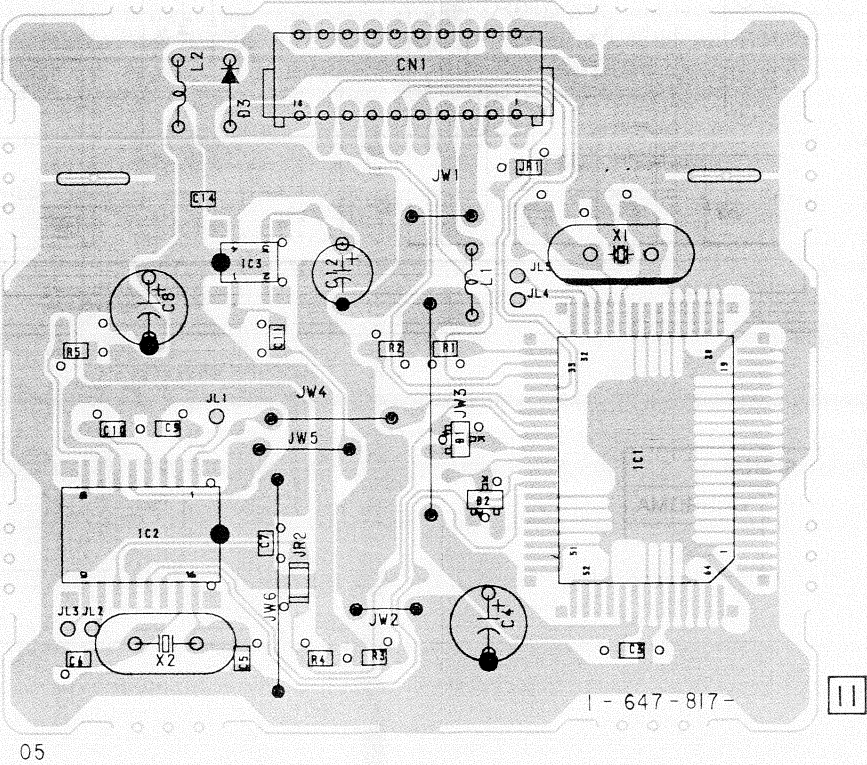


CP-65 BOARD (B,UY MODEL ONLY)

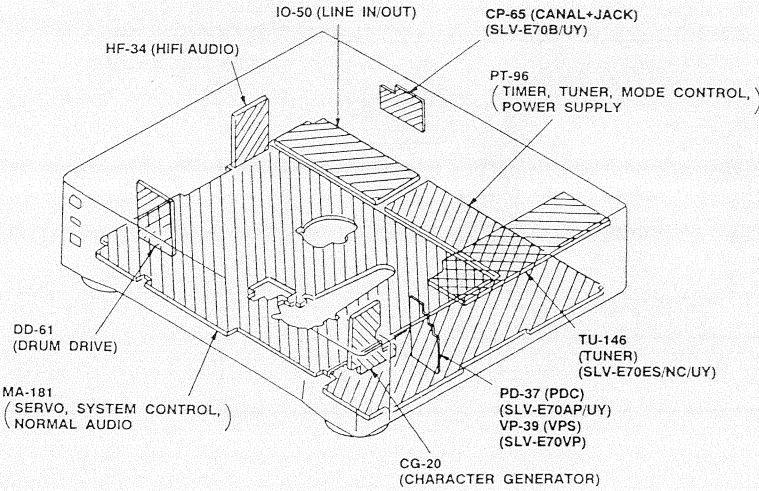
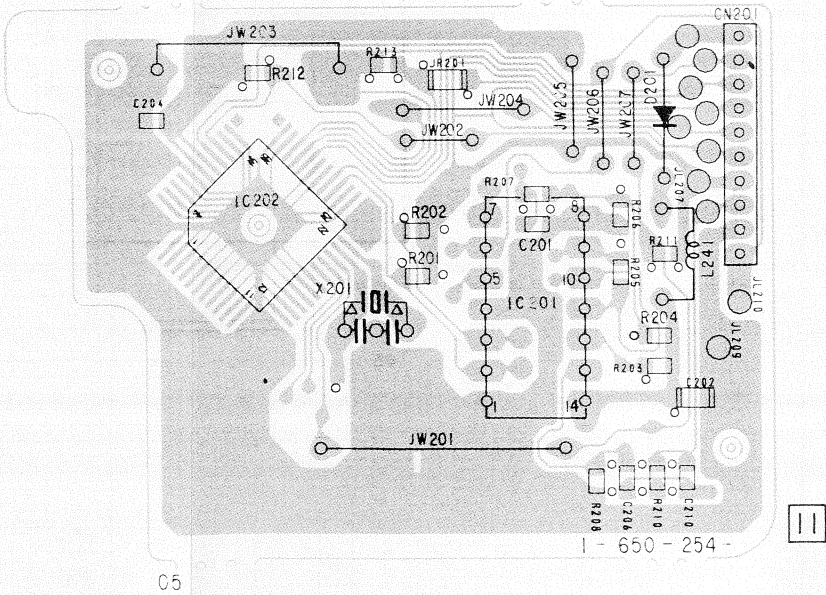


• There is no indication for destination in the printed wiring board diagram.

PD-37 BOARD (AP,UY MODEL ONLY)

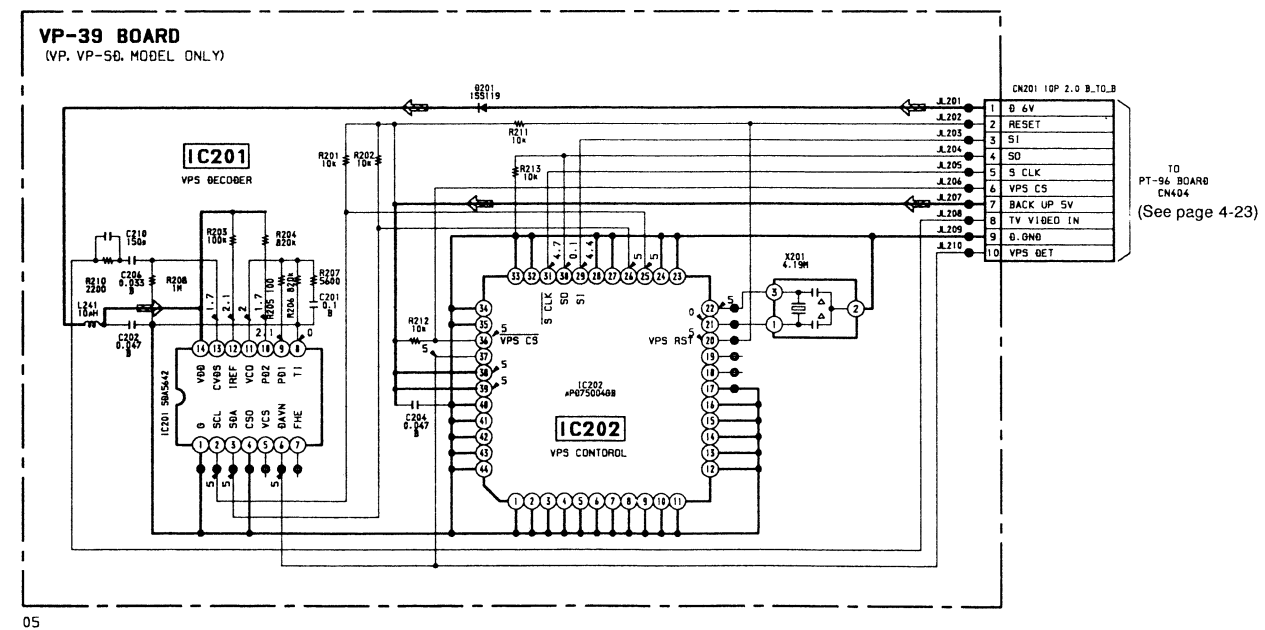
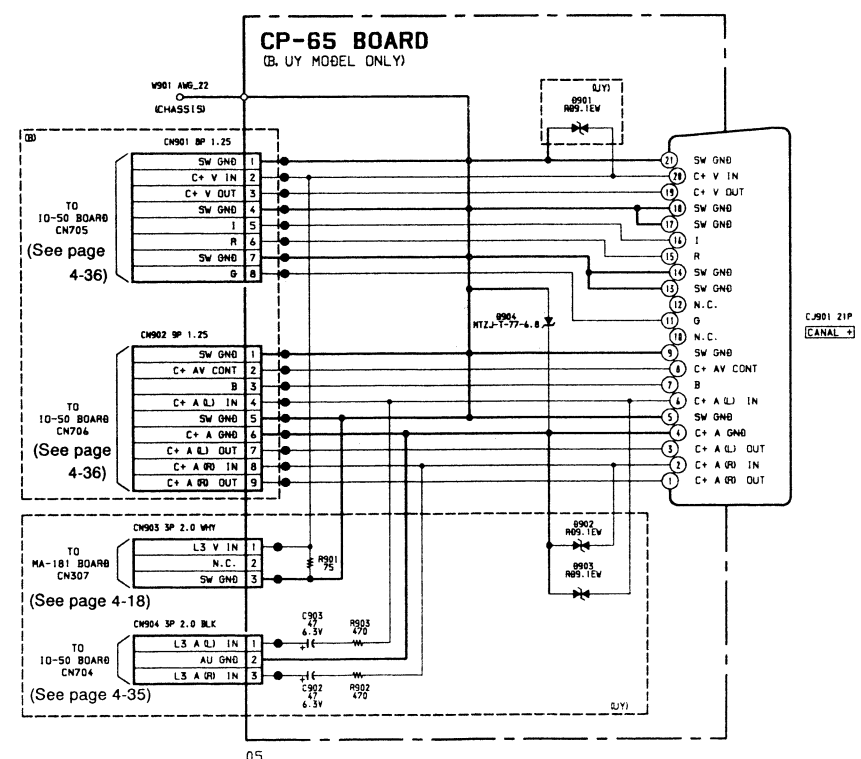
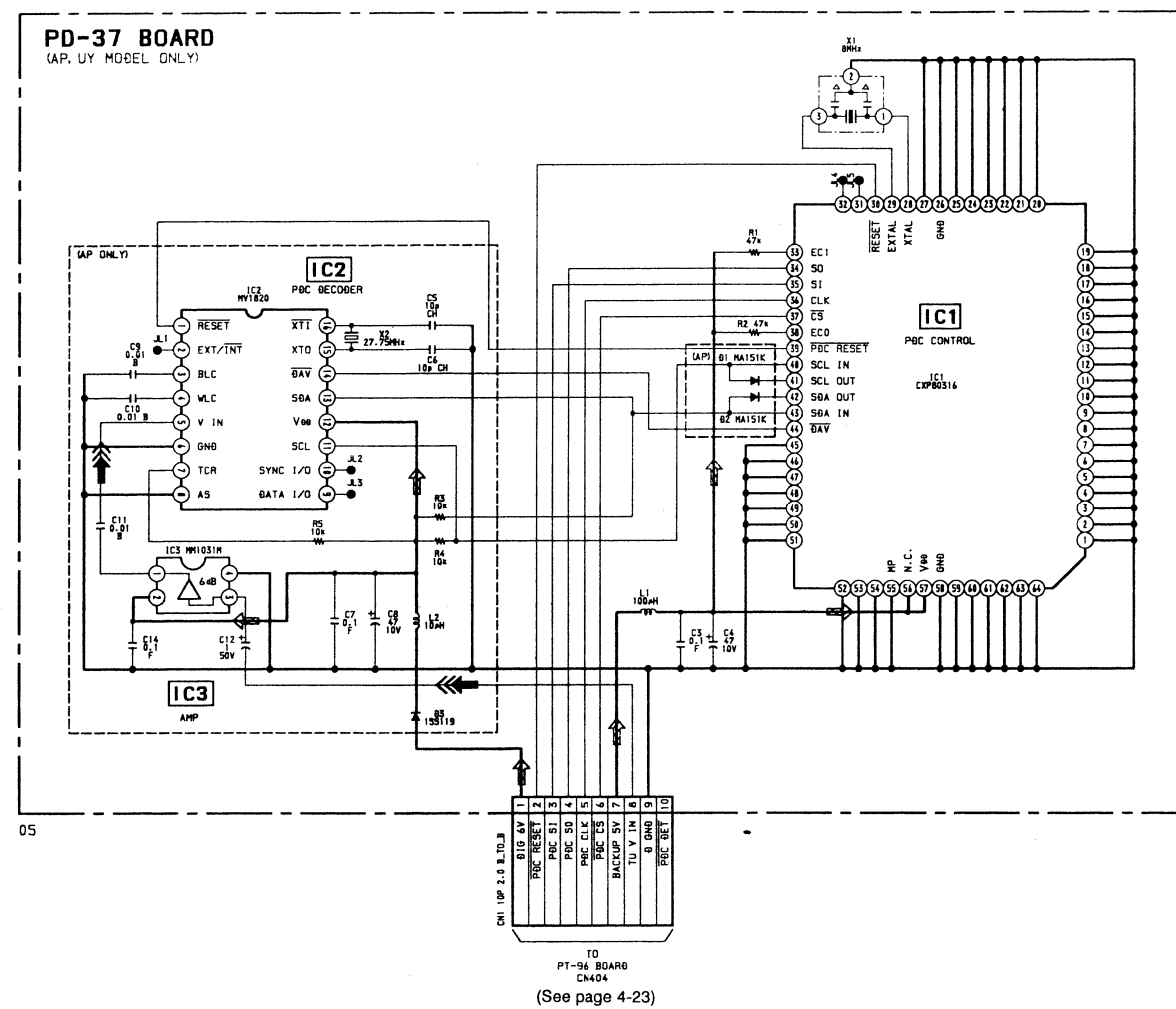
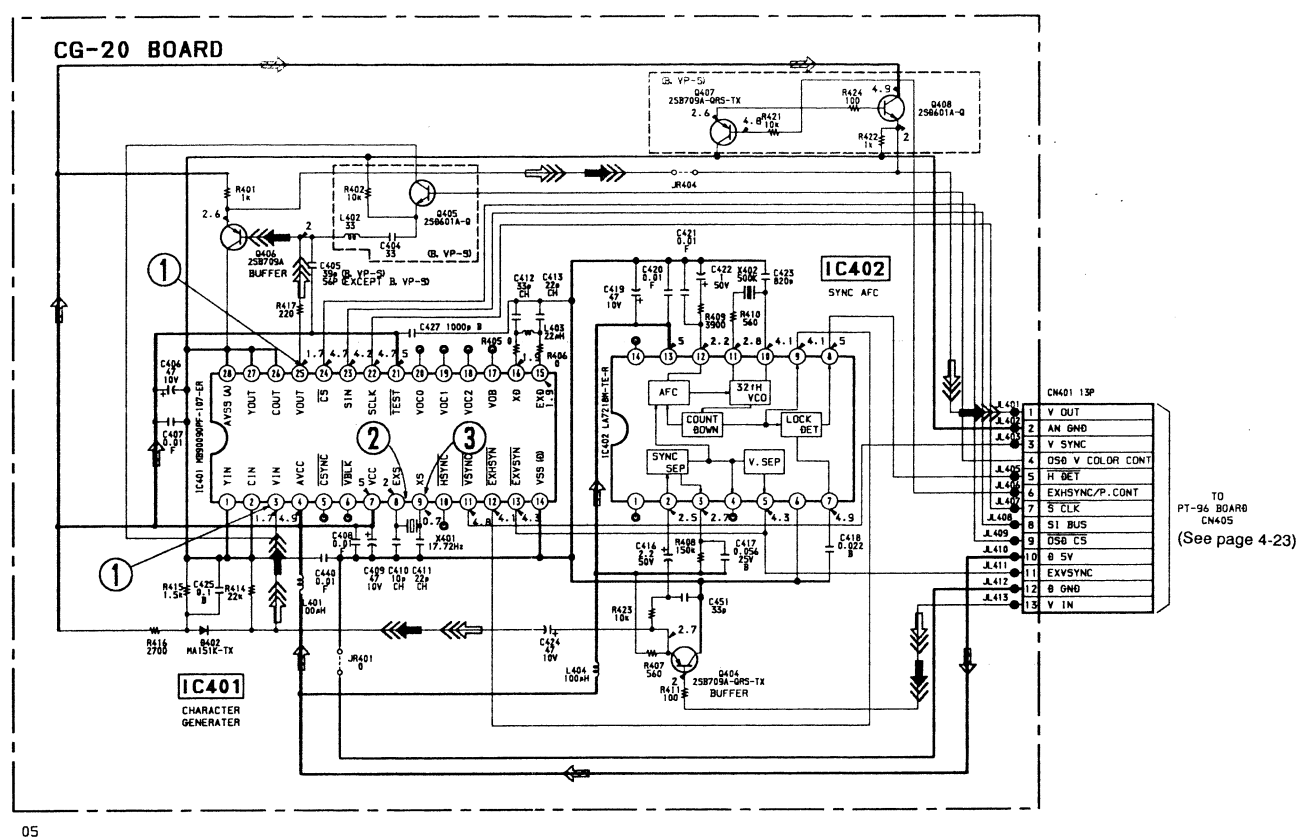


VP-39 BOARD (VP,VP-S MODEL ONLY)



PERIPHERY

A
B
C
D
E
F
G
H
I
J



4-3. SEMICONDUCTORS

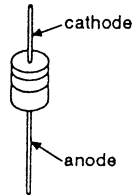
DTA144ES
DTC144ES
2SC4040-TL2-Q



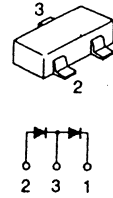
2SB733-34
2SD773-34



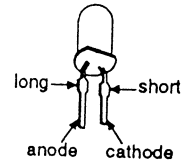
MTZJ-13
MTZJ-4.3
RD33ES-B2
RD4.3ES-B1
RD4.7ES-B2
RD5.1ES-B2
RD6.2ES-B2
RD6.8ES-B1
RD6.8ES-B2
1SS119
11ES2



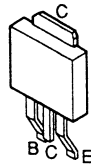
1SS226



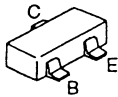
TLY123



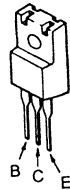
2SD1802FA-S



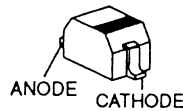
DTC114TK-T146
MSB709-RT1
MSD601-RT1
UN211L
UN2111
UN221L-TX
UN2211
UN2213
2SA1162-G
2SA1162Y-TE85L
2SC2712-YG
2SD601A-Q



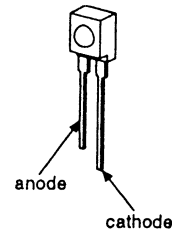
2SD2394-F



MA110



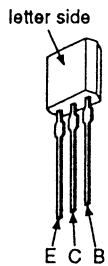
GL451VS1



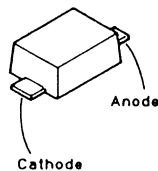
PT483F1S



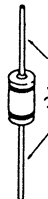
UN411L
UN4111
2SC2785-HFE



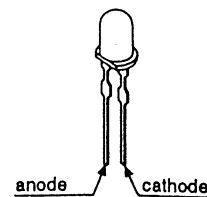
DTZ30C-TT11



RD9.1E-W



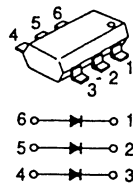
SLR34DC3
SLR34VC3



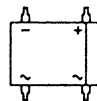
2SA733-K
2SD655E



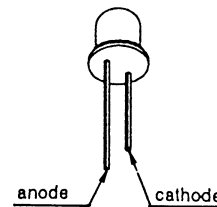
IMN10



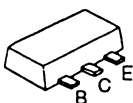
S1WB60



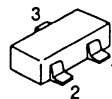
SLR-34MCA49
SLR-34VCA49



2SB1122-S
2SD1834



1SS184
1SS193



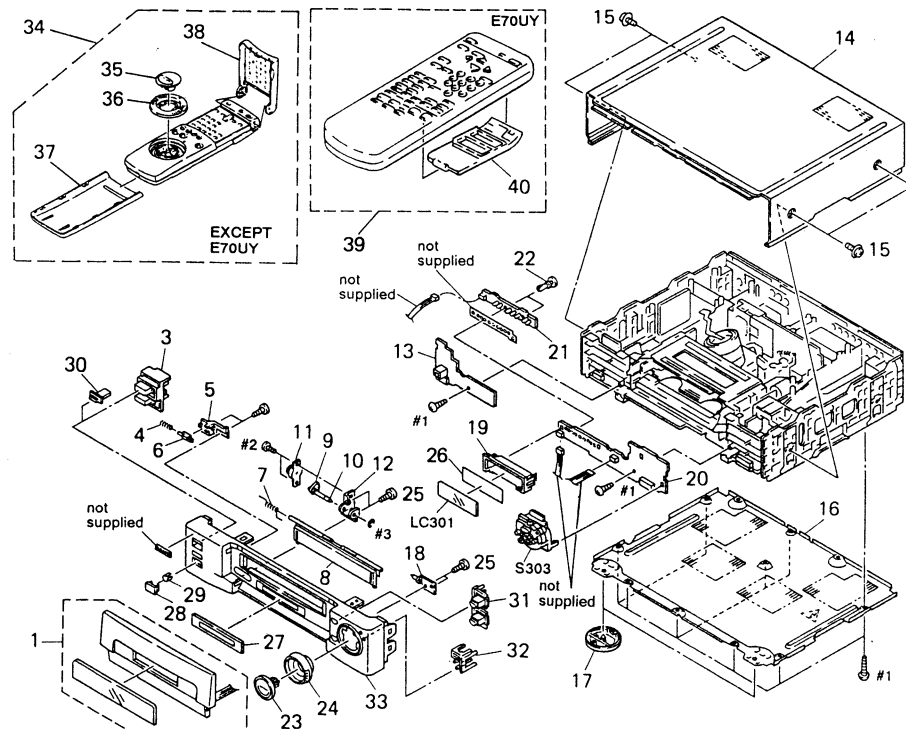
5-1. EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of the electrical parts list.
- Abbreviation VP-S: VP: MESECAM.

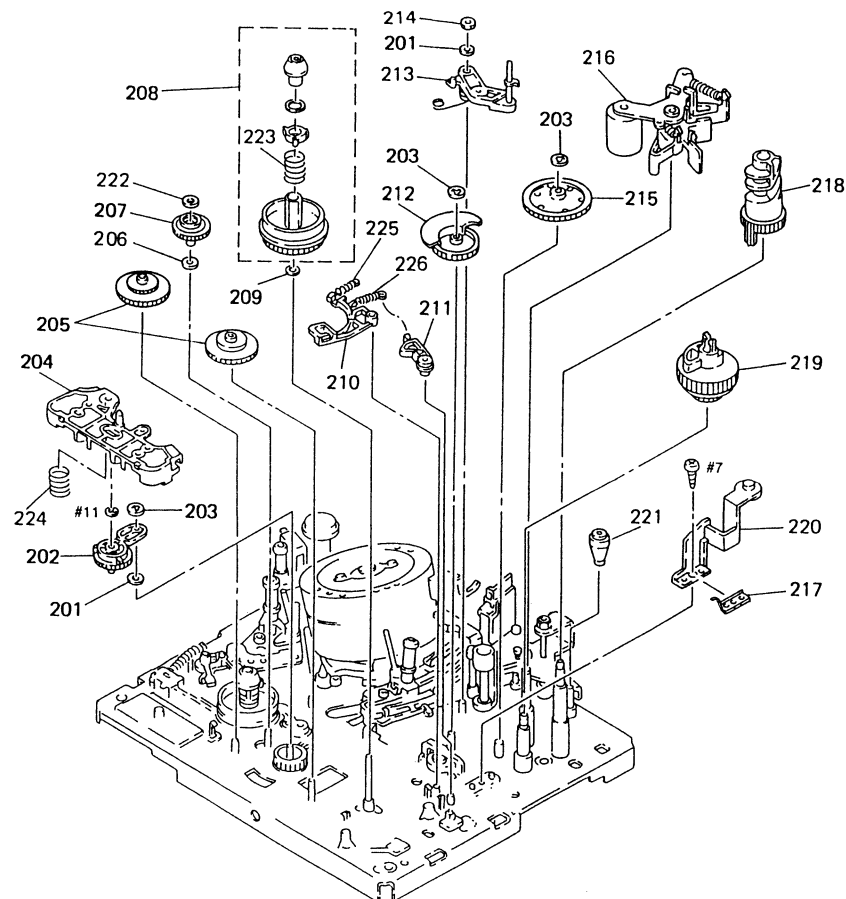
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

5-1-1. FRONT PANEL AND CABINET ASSEMBLIES



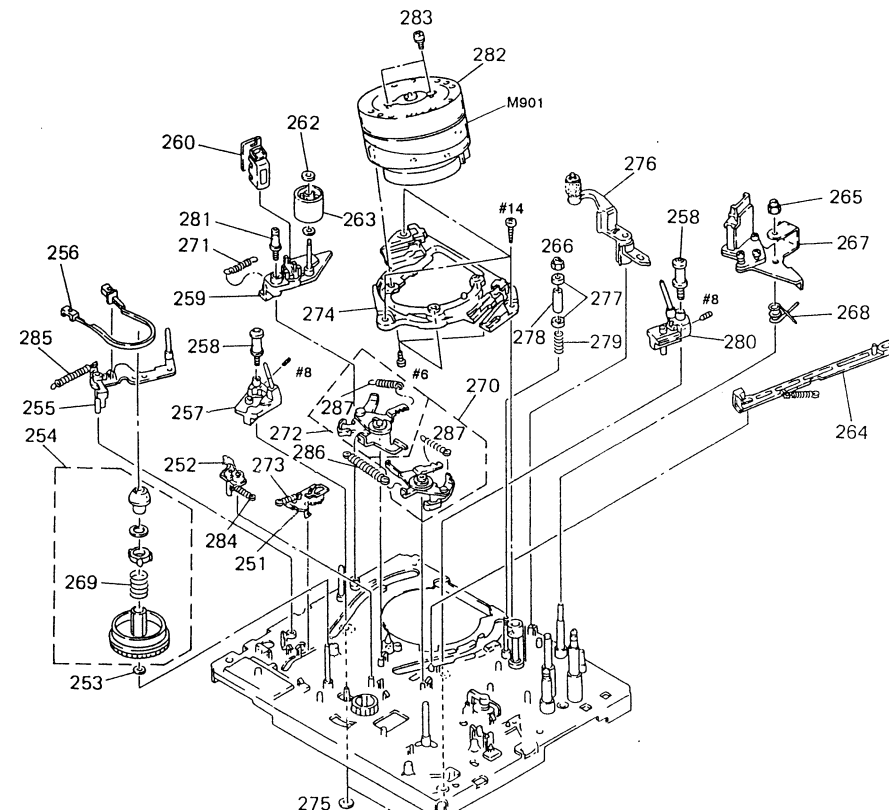
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	1-487-388-81	SWITCH BLOCK, CONTROL (E70AP)		23	X-3943-632-2	BUTTON ASSY, FUNCTION (E70B)	
1	1-487-388-71	SWITCH BLOCK, CONTROL (E70VP/VP-S)		24	X-3943-556-1	RING ASSY, SHUTTLE	
1	1-487-388-81	SWITCH BLOCK, CONTROL (E70ES/IT/NC/UY)		25	4-821-277-11	SCREW (#2, 6X8), TAPPING, BIND	
1	1-487-388-81	SWITCH BLOCK, CONTROL (E70B)		26	3-957-338-01	ILLUMINATOR	
3	3-957-389-01	BUTTON, POWER/EJECT		27	3-957-399-11	PLATE, TRANSPARENT	
4	3-957-388-01	SPRING, COMPRESSION		28	3-957-234-11	FILTER, REMOTE CONTROL	
5	3-957-312-11	HOLDER, LOCK CLAW		29	3-951-078-11	REFLECTOR, REMOTE CONTROL	
6	3-944-584-01	CLAW, LOCK		30	3-951-076-11	LENS, POWER	
7	3-951-089-01	SPRING (GE), FL		31	X-3943-627-1	BUTTON ASSY, P/H	
8	3-951-086-81	DOOR, CASSETTE (EXCEPT E70B)		32	3-957-311-11	LENS, REC	
8	3-957-483-01	DOOR, CASSETTE (E70B)		33	3-958-121-41	PANEL, FRONT (E70UY)	
9	3-957-382-01	GEAR, FULCRUM		33	X-3943-804-1	PANEL SUB ASSY (E70B)	
10	3-957-383-01	SHAFT, FULCRUM GEAR		33	X-3943-805-1	PANEL SUB ASSY (E70AP)	
11	3-319-224-11	DAMPER, SMALL		33	X-3943-806-1	PANEL SUB ASSY (E70IT/VP/VP-S)	
12	3-957-381-01	PLATE, FULCRUM (LEFT), DOOR		33	X-3943-807-1	PANEL SUB ASSY (E70ES/NC)	
13	A-6720-592-A	MF-243 BOARD, COMPLETE (E70UY)		34	1-487-385-41	REMOTE COMMANDER (RMT-V142C) (E70AP/ES/IT/NC/VP/VP-S)	
13	A-6720-631-A	MF-243 BOARD, COMPLETE (EXCEPT E70UY)		34	1-487-546-71	REMOTE COMMANDER (RMT-V146F) (E70B)	
14	3-957-479-01	CASE, UPPER		35	X-3943-630-1	BUTTON ASSY	
15	3-710-901-11	SCREW (TP3X8), CASE		36	3-957-513-11	SHUTTLE RING	
16	3-957-480-01	PLATE, BOTTOM		37	3-708-816-21	COVER, SLIDE (E70AP/ES/IT/NC/VP/VP-S)	
17	3-957-248-01	INSULATOR		37	3-708-816-41	COVER, SLIDE (E70B)	
18	X-3943-587-1	PLATE (RIGHT) ASSY, FULCRUM, DOOR		38	3-708-876-01	COVER, ENGLISH (EXCEPT E70B)	
19	3-957-314-11	HOLDER, LCD		38	3-708-876-11	COVER, FRENCH (E70B)	
20	A-6721-832-A	MF-242 BOARD, COMPLETE (EXCEPT E70B)		39	1-487-531-31	REMOTE COMMANDER (RMT-V148L) (E70UY)	
20	A-6721-834-A	MF-242 BOARD, COMPLETE (E70B)		40	3-943-535-01	COVER, BATTERY (E70UY)	
21	A-6720-633-A	PL-24 BOARD, COMPLETE		LCD301	1-810-354-11	DISPLAY PANEL, LIQUID CRYSTAL (EXCEPT E70B)	
22	3-957-327-01	RIVET, PUSH		LCD301	1-810-355-11	DISPLAY PANEL, LIQUID CRYSTAL (E70B)	
23	X-3943-591-1	BUTTON ASSY, FUNCTION (EXCEPT E70B)		S303	1-692-728-11	SWITCH, ROTARY (LED) (PLAY/STOP/REW/FF)	

5-1-4. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	3-701-438-11	WASHER, 2.5		214	3-736-740-01	NUT (M2X0.25), NYLON	
202	X-3727-776-1	ARM ASSY, PENDULUM		215	3-736-116-01	GEAR, COMMUNICATION	
203	3-669-595-00	WASHER (2), STOPPER		216	X-3727-770-1	PINCH ROLLER BLOCK ASSY	
204	3-736-172-02	RELEASE, LOCK, REEL		217	3-744-227-01	SPRING, FL GROUND	
205	X-3727-795-1	GEAR ASSY, RELAY		218	3-952-182-01	CAM, ELEVATOR	
206	3-736-074-01	RETAINER (SMALL), THRUST		219	3-943-700-01	GEAR, PRESS CAM	
207	3-736-037-01	GEAR, REW		220	3-946-652-01	OPENER, LID	
208	X-3727-789-1	TABLE ASSY, REEL		221	3-738-250-01	SCREW, AC ADJUSTMENT	
209	3-738-212-21	RETAINER, THRUST, REEL TABLE		222	3-736-069-01	RETAINER, SPRING	
210	X-3733-335-1	BRAKE ASSY (AT), T SOFT		223	3-739-621-01	SPRING, COMPRESSION	
211	3-736-105-01	ARM, REV BRAKE		224	3-736-020-11	SPRING, COMPRESSION	
212	3-736-143-01	GEAR, RVS CAM		225	3-736-024-01	SPRING, TENSION (FOR T SOFT BRAKE)	
213	X-3942-218-1	ARM ASSY, RVS		226	3-736-025-01	SPRING, TENSION (REW BRAKE)	

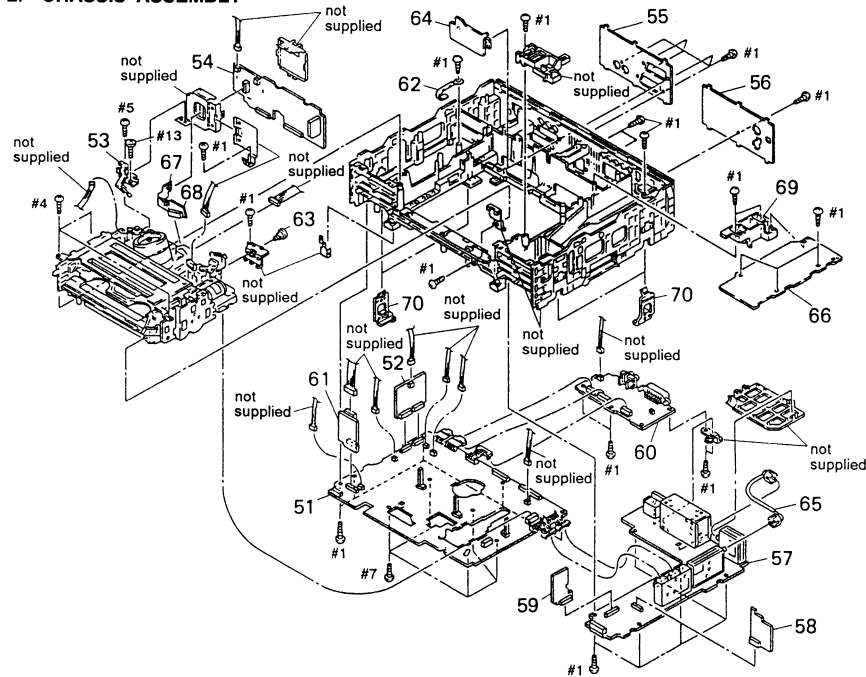
5-1-5. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
251	A-6759-483-A	TAKE-UP BLOCK ASSY, S		271	3-736-745-01	SPRING, TENSION	
252	X-3727-773-1	ARM ASSY (S), SOFT BRAKE		272	X-3733-336-2	BRAKE ASSY (2) AT, S	
253	3-738-212-21	RETAINER, THRUST, REEL TABLE		273	3-738-284-01	SPRING, TENSION	
254	X-3941-194-1	TABLE ASSY, REEL, S		274	X-3727-791-2	DRUM (BASE) ASSY	
255	X-3727-772-5	ARM ASSY, TENSION REGULATOR		275	3-736-073-01	SLIDER, POLYETHYLENE	
256	X-3727-797-1	BAND ASSY, TENSION REGULATOR		276	A-6747-267-A	ARM BLOCK ASSY (S), C ROLLER	
257	X-3272-786-1	SHUTTLE (LEFT) ASSY		277	3-736-733-02	FLANGE, 7 GUIDE	
258	X-3733-301-1	ROLLER ASSY, GUIDE		278	3-736-730-01	SLEEVE, #7 GUIDE	
259	X-3942-897-1	BASE ASSY, STABILIZER		279	3-749-099-01	SPRING (#7 GUIDE), COMPRESSION	
260	1-543-647-11	HEAD, FE		280	X-3727-787-1	SHUTTLE (RIGHT) ASSY	
262	3-741-925-01	RING, RETAINING		281	X-3727-788-1	ROLLER ASSY, GUIDE, #2	
263	3-946-129-01	B STABILIZER		282	1-550-872-11	DRUM ASSY, ROTARY UPPER (D2R-60-R)	
264	X-3743-517-1	LEVER ASSY, RELEASE, C ROLLER		283	2-643-205-01	SCREW (PSW3X8)	
265	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT		284	3-736-047-01	SPRING, TENSION (S SOFT)	
266	3-942-866-01	NUT (M3) (3X0.5), NYLON		285	3-733-389-01	SPRING, TENSION (TENSION REGULATOR AT)	
267	A-6761-129-C	HEAD BLOCK ASSY, ACE		286	3-738-221-01	SPRING, TENSION (MAIN BRKE 1)	
268	3-946-148-01	SPRING, TORSION		287	3-738-220-01	SPRING, TENSION (MAIN BRKE 2)	
269	3-739-621-01	SPRING, COMPRESSION		M901	1-550-873-11	LOWER DRUM ASSY D2L-60A-R	
270	X-3729-926-1	BRAKE ASSY (2), T					

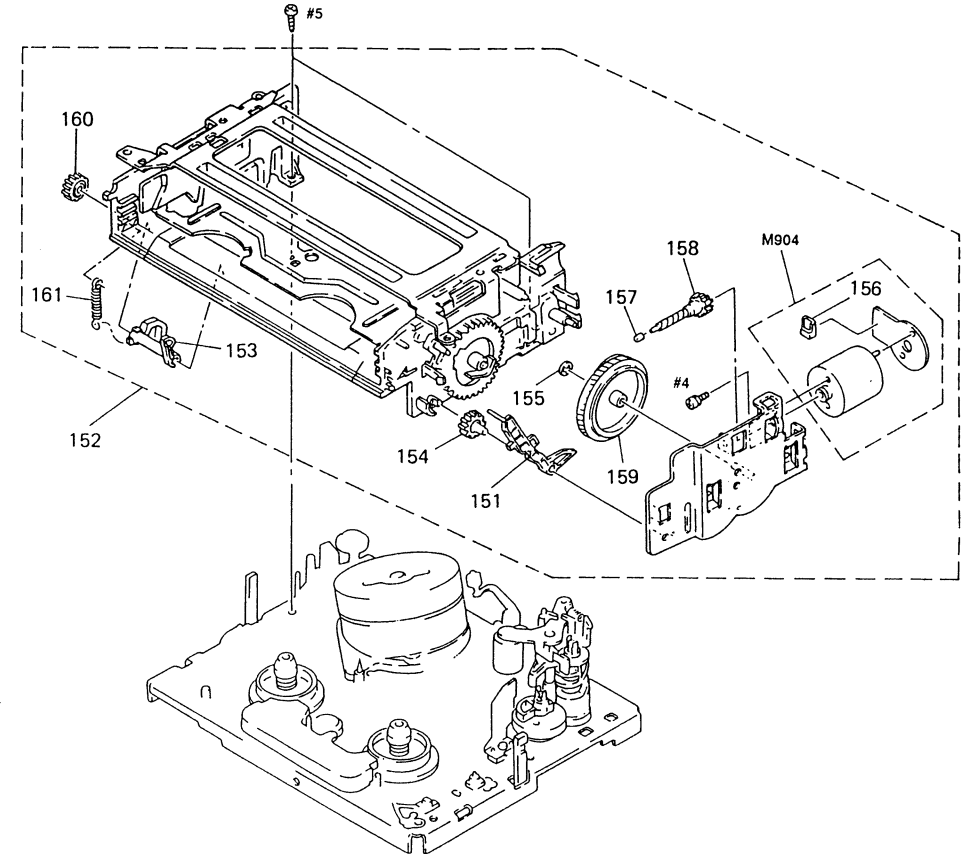
Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

5-1-2. CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* 51	A-6782-310-A	MA-181 BOARD, COMPLETE (E70AP/ES/IT/NC/VP)		* 58	A-6781-298-A	PD-37 BOARD, COMPLETE (E70AP)	
* 51	A-6782-311-A	MA-181 BOARD, COMPLETE (E70B)		* 58	A-6781-309-A	PD-37 BOARD, COMPLETE (E70UY)	
* 51	A-6782-320-A	MA-181 BOARD, COMPLETE (E70UY)		* 59	A-6754-660-A	CG-20 BOARD, COMPLETE (E70B/VP-S)	
* 51	A-6782-339-A	MA-181 BOARD, COMPLETE (E70VP-S)		* 59	A-6754-691-A	CG-20 BOARD, COMPLETE (E70AP/ES/IT/NC/UY/VP)	
* 52	A-6721-595-A	HF-34 BOARD, COMPLETE					
53	X-3943-595-1	GROUND ASSY (GT), SHAFT		* 60	A-6754-655-A	10-50 BOARD, COMPLETE (E70UY)	
* 54	A-6727-542-A	RV-33 BOARD, COMPLETE (E70B)		* 60	A-6754-697-A	10-50 BOARD, COMPLETE (E70AP/ES/IT/NC)	
* 54	A-6727-545-A	RV-33 BOARD, COMPLETE (E70AP/ES/IT/NC/UY/VP)		* 60	A-6754-698-A	10-50 BOARD, COMPLETE (E70B)	
* 54	A-6727-590-A	RV-33 BOARD, COMPLETE (E70VP-S)		* 60	A-6754-699-A	10-50 BOARD, COMPLETE (E70VP/VP-S)	
				* 61	A-6781-280-A	DD-61 BOARD, COMPLETE	
* 55	3-957-489-01	PLATE, JACK(10) (E70AP/ES/IT/NC/VP/VP-S)		62	3-703-150-11	STOPPER, WIRING	
* 55	3-957-489-11	PLATE, JACK(10) (E70B)		63	3-736-055-01	SCREW (3X8), TAPPING	
* 55	3-957-489-31	PLATE, JACK(10) (E70UY)		* 64	A-6781-275-A	CP-65 BOARD, COMPLETE (E70B)	
* 56	3-957-491-01	PLATE, JACK(TU) (EXCEPT E70B)		* 64	A-6781-282-A	CP-65 BOARD, COMPLETE (E70UY)	
* 56	3-957-491-11	PLATE, JACK(TU) (E70B)		65	1-555-110-00	CABLE, PIN (E70ES/NC/UY)	
* 57 Δ	A-6727-570-A	PT-96 BOARD, COMPLETE (E70UY)		65	1-558-924-21	CABLE, PIN (E70AP/B/IT/VP/VP-S)	
* 57 Δ	A-6727-571-A	PT-96 BOARD, COMPLETE (E70AP)		* 66	A-6754-656-A	TU-146 BOARD, COMPLETE (E70UY)	
* 57 Δ	A-6727-572-A	PT-96 BOARD, COMPLETE (E70ES/NC)		* 66	A-6754-657-A	TU-146 BOARD, COMPLETE (E70ES/NC)	
* 57 Δ	A-6727-573-A	PT-96 BOARD, COMPLETE (E70B)		67	1-650-282-11	FP-72 FLEXIBLE BOARD	
* 57 Δ	A-6727-574-A	PT-96 BOARD, COMPLETE (E70VP/VP-S)		68	1-695-486-11	CONNECTOR, BOARD TO BOARD 10P	
* 57 Δ	A-6727-575-A	PT-96 BOARD, COMPLETE (E70IT)		69	3-957-546-01	HOLDER (TU), PCB (E70ES/NC/UY)	
* 58	A-6781-281-A	VP-39 BOARD, COMPLETE (E70VP/VP-S)		* 70	3-957-387-01	STOPPER (GT), UPPER CASE	

5-1-3. FL CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
151	3-741-935-06	LEVER, FLAT DOOR		157	3-716-144-02	RETAINER, WORM	
152	A-6751-421-A	FL BLOCK ASSY (M2)		158	3-736-100-01	GEAR (FL), WORM	
153	3-736-163-01	LEVER, ERASING PROTECTION		159	3-736-164-01	WHEEL (FL), WORM	
154	X-3727-775-2	GEAR (RIGHT) ASSY, MIDWAY		160	3-736-044-02	GEAR (LEFT), MIDWAY	
155	3-696-510-01	WASHER (3), STOPPER		161	3-739-687-01	SPRING, TENSION (REC PROOF)	
156	1-564-413-11	PIN, CONNECTOR 3P		M904	X-3727-784-1	MOTOR ASSY	

Ref. No.	Part No.	Description	Remark
R417	1-216-033-00	METAL CHIP 220 5% 1/10W	
R421	1-216-081-00	METAL CHIP 22K 5% 1/10W (E70B/VP-S)	
R423	1-216-073-00	METAL CHIP 10K 5% 1/10W	
< VIBRATOR >			
X401	1-577-289-11	VIBRATOR, CRYSTAL (17.72MHz)	
X402	1-577-165-11	VIBLATOR, CERAMIC (500KHz)	

*	A-6781-275-A	CP-65 BOARD, COMPLETE (E70B)	

*	A-6781-282-A	CP-65 BOARD, COMPLETE (E70UY)	

(Ref. No. 9,000Series)			
< CAPACITOR >			
C902	1-126-154-11	ELECT 47uF 20% 6.3V (E70UY)	
C903	1-126-154-11	ELECT 47uF 20% 6.3V (E70UY)	
< CONNECTOR >			
CJ901	1-568-016-11	SOCKET, PIN 21P (CANAL +EURO-AV(LINE IN2)) (E70B/UY)	
* CN901	1-691-620-21	SOCKET, CONNECTOR 8P (E70B)	
* CN902	1-691-621-11	SOCKET, CONNECTOR 9P (E70B)	
* CN903	1-564-013-11	PIN, CONNECTOR 3P (E70UY)	
CN904	1-564-013-21	PIN, CONNECTOR 3P (E70UY)	
< DIODE >			
D901	8-719-108-12	DIODE RD9.1E-W (E70UY)	
D902	8-719-108-12	DIODE RD9.1E-W (E70UY)	
D903	8-719-108-12	DIODE RD9.1E-W (E70UY)	
< RESISTOR >			
R901	1-247-804-11	CARBON 75 5% 1/4W (E70UY)	
R902	1-249-413-11	CARBON 470 5% 1/4W F (E70UY)	
R903	1-249-413-11	CARBON 470 5% 1/4W F (E70UY)	

*	A-6781-280-A	DD-61 BOARD, COMPLETE	

(Ref. No. 2,000Series)			
< CAPACITOR >			
C550	1-124-927-11	ELECT 4.7uF 20% 100V	
C551	1-124-927-11	ELECT 4.7uF 20% 100V	
C552	1-124-927-11	ELECT 4.7uF 20% 100V	
C553	1-124-907-11	ELECT 10uF 20% 50V	
C554	1-124-907-11	ELECT 10uF 20% 50V	

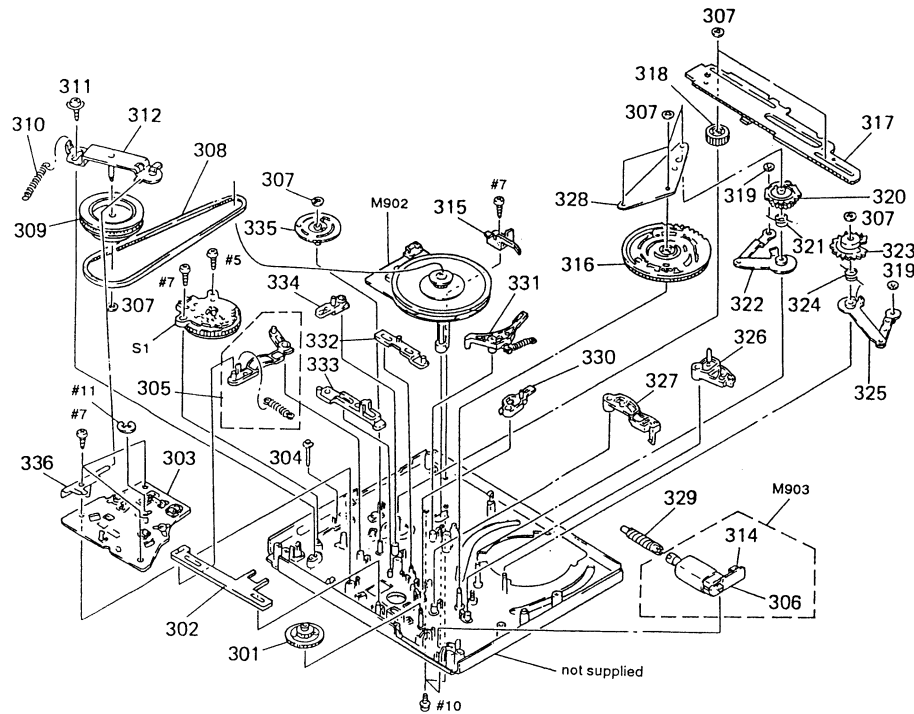
Ref. No.	Part No.	Description	Remark
C555	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
C556	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
C557	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
C558	1-162-852-11	CERAMIC 0.15uF 10% 16V	
C559	1-162-851-11	CERAMIC 0.1uF 10% 16V	
C560	1-124-907-11	ELECT 10uF 20% 50V	
C581	1-124-925-11	ELECT 2.2uF 20% 100V	
C582	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C583	1-126-233-11	ELECT 22uF 20% 50V	
< CONNECTOR >			
CN501	1-564-726-11	PIN HEADER, ANGLE 10P	
CN502	1-573-824-11	CONNECTOR, BOARD TO BOARD 10P	
< IC >			
IC501	8-759-420-83	IC AN3814K	
IC503	8-759-998-92	IC LM393D	
IC581	8-759-970-89	IC BA10358F	
< JUMPER RESISTOR >			
JR501	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR502	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR503	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR504	1-216-296-00	METAL CHIP 0 5% 1/8W	
< COIL >			
L581	1-410-513-11	INDUCTOR 22uH	
< RESISTOR >			
R550	1-216-005-00	METAL CHIP 15 5% 1/10W	
R551	1-216-005-00	METAL CHIP 15 5% 1/10W	
R552	1-216-005-00	METAL CHIP 15 5% 1/10W	
R553	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R554	1-216-347-11	METAL OXIDE 0.68 5% 1W F	
R555	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R556	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R557	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R558	1-216-222-00	METAL GLAZE 10K 5% 1/8W	
R559	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R581	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R582	1-216-079-00	METAL CHIP 18K 5% 1/10W	
R583	1-216-089-00	METAL CHIP 47K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
*	A-6721-595-A	HF-34 BOARD, COMPLETE	

(Ref. No. 6,000Series)			
< CAPACITOR >			
C101	1-124-907-11	ELECT 10uF 20% 50V	
C102	1-124-907-11	ELECT 10uF 20% 50V	
C103	1-124-927-11	ELECT 4.7uF 20% 100V	
C104	1-124-927-11	ELECT 4.7uF 20% 100V	
C105	1-124-126-00	ELECT 47uF 20% 10V	
C106	1-124-126-00	ELECT 47uF 20% 10V	
C107	1-124-126-00	ELECT 47uF 20% 10V	
C108	1-126-962-11	ELECT 3.3uF 20% 50V	
C109	1-126-962-11	ELECT 3.3uF 20% 50V	
C110	1-126-962-11	ELECT 3.3uF 20% 50V	
C111	1-126-962-11	ELECT 3.3uF 20% 50V	
C112	1-126-233-11	ELECT 22uF 20% 50V	
C113	1-126-233-11	ELECT 22uF 20% 50V	
C114	1-124-252-00	ELECT 0.33uF 20% 50V	
C115	1-124-443-00	ELECT 100uF 20% 10V	
C116	1-124-443-00	ELECT 100uF 20% 10V	
C117	1-104-792-51	ELECT 33uF 20% 16V	
C118	1-137-372-11	FILM 0.022uF 5% 50V	
C119	1-137-372-11	FILM 0.022uF 5% 50V	
C120	1-137-370-11	FILM 0.01uF 5% 50V	
C121	1-137-370-11	FILM 0.01uF 5% 50V	
C122	1-137-367-11	FILM 0.0033uF 5% 50V	
C123	1-137-367-11	FILM 0.0033uF 5% 50V	
C124	1-137-364-11	FILM 0.001uF 5% 50V	
C125	1-163-006-11	CERAMIC CHIP 560PF 10% 50V	
C126	1-163-006-11	CERAMIC CHIP 560PF 10% 50V	
C127	1-163-006-11	CERAMIC CHIP 560PF 10% 50V	
C128	1-163-006-11	CERAMIC CHIP 560PF 10% 50V	
C129	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C130	1-163-007-11	CERAMIC CHIP 680PF 10% 50V	
C131	1-137-372-11	FILM 0.022uF 5% 50V	
C132	1-137-372-11	FILM 0.022uF 5% 50V	
C133	1-163-145-00	CERAMIC CHIP 0.0015uF 5% 50V	
C134	1-163-145-00	CERAMIC CHIP 0.0015uF 5% 50V	
C135	1-163-038-11	CERAMIC CHIP 0.1uF 25V	
< CONNECTOR >			
* CN101	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P	
* CN102	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P	
* CN103	1-564-013-11	PIN, CONNECTOR 3P	
< DIODE >			
D101	8-719-404-46	DIODE MA110	

Ref. No.	Part No.	Description	Remark
< IC >			
IC101	8-759-188-81	IC XLH7776K-VP	
< TRANSISTOR >			
Q101	8-729-804-41	TRANSISTOR 2SB1122-S	
Q102	8-729-820-68	TRANSISTOR 2SD1802FA-S	
Q103	8-729-421-19	TRANSISTOR UN2213	
Q104	8-729-421-19	TRANSISTOR UN2213	
< RESISTOR >			
R101	1-208-806-11	METAL GLAZE 10K 0.50% 1/10W	
R102	1-208-809-11	METAL GLAZE 13K 0.50% 1/10W	
R103	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R104	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R105	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R106	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R107	1-216-083-00	METAL CHIP 27K 5% 1/10W	
R108	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R109	1-216-075-00	METAL CHIP 12K 5% 1/10W	
R110	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R111	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R112	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R113	1-216-109-00	METAL CHIP 330K 5% 1/10W	
R114	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R115	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R116	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R118	1-216-129-00	METAL CHIP 2.2M 5% 1/10W	
R119	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R120	1-216-295-00	METAL CHIP 0 5% 1/10W	
R121	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R123	1-216-295-00	METAL CHIP 0 5% 1/10W	
R124	1-216-066-00	METAL CHIP 5.1K 5% 1/10W	
R125	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R130	1-216-049-00	METAL CHIP 1K 5% 1/10W	
< VARIABLE RESISTOR >			
RV101	1-241-764-11	RES, ADJ, CERMET 10K	
RV102	1-241-763-11	RES, ADJ, CERMET 4.7K	
RV103	1-241-763-11	RES, ADJ, CERMET 4.7K	

5-1-6. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
301	3-736-015-01	WHEEL (CAM), WORM		321	3-736-092-01	SPRING (RIGHT), TORSION	
302	3-736-158-01	PLATE, SLIDE, PENDULUM		322	X-3727-777-1	ARM (RIGHT) ASSY, LOADING	
303	A-6739-096-A	CHASSIS BLOCK ASSY, SUB		323	3-736-147-01	GEAR (LEFT), THREADING	
304	3-736-091-01	PIN, SWITCH		324	3-736-040-01	SPRING (LEFT), TORSION	
305	X-3729-924-1	ARM ASSY, PENDULUM FUNCTION		325	X-3727-778-1	ARM (LEFT) ASSY, LOADING	
306	1-633-460-11	CA-41 BOARD		326	3-736-142-01	ARM, TENSION REGULATOR FUNCTION	
307	3-669-595-00	WASHER (2), STOPPER		327	3-736-140-01	ARM, S TAKE-UP	
308	3-736-013-01	BELT, TIMING		328	3-733-396-01	HOLDER, CAM GEAR	
309	X-3727-782-1	PULLEY ASSY		329	3-733-395-01	GEAR (CAM), WORM	
310	3-736-089-01	SPRING, TENSION		330	3-733-397-01	ARM, BRAKE FUNCTION	
311	3-749-796-11	SCREW, TAPPING +BVTP WASHER		331	X-3727-769-1	BRAKE ASSY, CAP	
312	X-3727-761-1	ARM ASSY, ADJUSTMENT		332	3-733-398-01	PLATE, SLIDE, BRAKE	
314	1-564-013-41	PIN, CONNECTOR 3P		333	3-736-103-01	PLATE, SLIDE, LIMITER	
315	3-736-744-01	RETAINER, ROTOR		334	3-736-016-01	ARM, LIMITER FUNCTION	
316	3-736-176-01	GEAR, CAM		335	3-736-170-01	GEAR, RKB CAM	
317	3-736-177-01	PLATE, SLIDE, MODE		336	3-741-950-01	SPRING PLATE, SC GROUND (AT)	
318	3-733-394-01	GEAR, RVS RELAY		M902	8-835-489-01	MOTOR, DC U-26K	
319	3-736-069-01	RETAINER, SPRING		M903	X-3733-302-1	MOTOR ASSY, CAM	
320	3-736-148-01	GEAR (RIGHT), THREADING		S1	1-571-820-11	SWITCH, ROTARY (CAM ENCODER)	

5-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A... uPA...: μ PA...
uPB...: μ PB... uPC...: μ PC... uPD...: μ PD...
• ABBREVIATION
VP-S: VP: MESECAM
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-6754-660-A	CG-20 BOARD, COMPLETE (E70B/VP-S)				< DIODE >	

*	A-6754-691-A	CG-20 BOARD, COMPLETE		D402	8-719-801-48	DIODE 1SS193	
		*****				< IC >	
		(70AP/ES/IT/NC/UY/VP)		IC401	8-759-247-44	IC MB90090PF-107-ER	
		(Ref. No. 4, 000Series)		IC402	8-759-164-09	IC LA7218M	
		< CAPACITOR >				< JUMPER RESISTOR >	
C404	1-163-105-00	CERAMIC CHIP 33PF 5% 50V (E70B/VP-S)		JR401	1-216-296-00	METAL CHIP 0 5% 1/8W	
C405	1-163-107-00	CERAMIC CHIP 39PF 5% 50V (E70B/VP-S)		JR404	1-216-295-00	METAL CHIP 0 5% 1/10W	
C405	1-163-245-11	CERAMIC CHIP 56PF 5% 50V (E70AP/ES/IT/NC/UY/VP)				< COIL >	
C406	1-124-126-00	ELECT 47uF 20% 10V		L401	1-408-982-11	INDUCTOR 100uH	
C407	1-163-031-11	CERAMIC CHIP 0.01uF 50V		L402	1-408-976-21	INDUCTOR 33uH (E70B/VP-S)	
C408	1-163-031-11	CERAMIC CHIP 0.01uF 50V		L403	1-408-974-21	INDUCTOR 22uH	
C409	1-124-126-00	ELECT 47uF 20% 10V		L404	1-408-982-11	INDUCTOR 100uH	
C410	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V				< TRANSISTOR >	
C411	1-163-235-11	CERAMIC CHIP 22PF 5% 50V		Q403	8-729-010-25	TRANSISTOR MSD601-RT1 (E70B/VP-S)	
C412	1-163-239-11	CERAMIC CHIP 33PF 5% 50V		Q404	8-729-216-22	TRANSISTOR 2SA1162-G	
C413	1-163-235-11	CERAMIC CHIP 22PF 5% 50V		Q405	8-729-422-27	TRANSISTOR 2SD601A-Q (E70B/VP-S)	
C416	1-124-257-00	ELECT 2.2uF 20% 50V		Q406	8-729-216-22	TRANSISTOR 2SA1162-G	
C417	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V		Q407	8-729-216-22	TRANSISTOR 2SA1162-G	
C418	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V				< RESISTOR >	
C419	1-124-126-00	ELECT 47uF 20% 10V		R401	1-216-049-00	METAL CHIP 1K 5% 1/10W	
C420	1-163-031-11	CERAMIC CHIP 0.01uF 50V		R402	1-216-222-00	METAL GLAZE 10K 5% 1/8W (E70B/VP-S)	
C421	1-163-031-11	CERAMIC CHIP 0.01uF 50V		R405	1-216-295-00	METAL CHIP 0 5% 1/10W	
C422	1-126-301-11	ELECT 1uF 20% 50V		R406	1-216-295-00	METAL CHIP 0 5% 1/10W	
C423	1-163-139-00	CERAMIC CHIP 820PF 5% 50V		R407	1-216-043-00	METAL CHIP 560 5% 1/10W	
C424	1-124-126-00	ELECT 47uF 20% 10V		R408	1-216-101-00	METAL CHIP 150K 5% 1/10W	
C425	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		R409	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
C427	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V		R410	1-216-043-00	METAL CHIP 560 5% 1/10W	
C440	1-163-031-11	CERAMIC CHIP 0.01uF 50V		R411	1-216-025-00	METAL CHIP 100 5% 1/10W	
C451	1-163-105-00	CERAMIC CHIP 33PF 5% 50V		R414	1-216-081-00	METAL CHIP 22K 5% 1/10W	
		< CONNECTOR >		R415	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
* CN401	1-573-827-11	CONNECTOR, BOARD TO BOARD 13P		R416	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	

Ref. No.	Part No.	Description	Remark
*	A-6754-655-A	IO-50 BOARD, COMPLETE (E70UY)	
*	A-6754-697-A	IO-50 BOARD, COMPLETE (E70AP/ES/IT/NC)	
*	A-6754-698-A	IO-50 BOARD, COMPLETE (E70B)	
*	A-6754-699-A	IO-50 BOARD, COMPLETE (E70VP/VP-S)	(Ref. No. 4,000Series)
< CAPACITOR >			
C701	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C702	1-124-126-00	ELECT 47uF	20% 10V
C703	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C704	1-163-031-11	CERAMIC CHIP 0.01uF	50V
(EXCEPT E70UY)			
C707	1-124-126-00	ELECT 47uF	20% 10V
C709	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C751	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C752	1-124-126-00	ELECT 47uF	20% 10V
C753	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C757	1-124-126-00	ELECT 47uF	20% 10V
C901	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C902	1-124-477-11	ELECT 47uF	20% 25V
C903	1-124-126-00	ELECT 47uF	20% 10V
C904	1-124-472-11	ELECT 470uF	20% 10V
C922	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C923	1-163-205-00	CERAMIC CHIP 0.001uF	5% 50V
(E70B)			
< CONNECTOR >			
CJ701	1-695-935-11	CONNECTOR (SQUARE TYPE) 21P	
(EURO-AV(LINE 1))			
CJ702	1-565-319-71	JACK, PIN 2P (AUDIO OUT)	
* CN701	1-691-407-11	CONNECTOR, BOARD TO BOARD 10P	
CN702	1-568-672-11	CONNECTOR, BOARD TO BOARD 12P	
* CN703	1-764-212-11	CONNECTOR, BOARD TO BOARD 13P	
CN704	1-506-468-11	PIN, CONNECTOR 3P	(E70UY)
CN705	1-691-908-21	CONNECTOR, WIRE TRAP 8P	(E70B)
* CN706	1-695-520-11	CONNECTOR, WIRE TRAP 9P	(E70B)
CN708	1-506-468-11	PIN, CONNECTOR 3P	
< DIODE >			
D701	8-719-911-19	DIODE 1SS119	
D702	8-719-911-19	DIODE 1SS119	
D703	8-719-911-19	DIODE 1SS119	(E70B)
D704	8-719-921-86	DIODE MTZJ-13	(E70B)
D901	8-719-109-97	DIODE RD6.8ES-B2	(E70B)

Ref. No.	Part No.	Description	Remark
D902	8-719-109-97	DIODE RD6.8ES-B2	(E70B)
D903	8-719-109-97	DIODE RD6.8ES-B2	(E70B)
D904	8-719-109-97	DIODE RD6.8ES-B2	(E70B/UY)
D905	8-719-109-97	DIODE RD6.8ES-B2	
D906	8-719-109-97	DIODE RD6.8ES-B2	
D907	8-719-109-97	DIODE RD6.8ES-B2	
D908	8-719-109-97	DIODE RD6.8ES-B2	(E70B)
D909	8-719-921-86	DIODE MTZJ-13	
D921	8-719-109-97	DIODE RD6.8ES-B2	
D922	8-719-911-19	DIODE 1SS119	
D925	8-719-982-09	DIODE MTZJ-4.3	
D951	8-719-108-12	DIODE RD9.1E-W	(E70UY)
D952	8-719-108-12	DIODE RD9.1E-W	(E70UY)
D953	8-719-108-12	DIODE RD9.1E-W	
D954	8-719-108-12	DIODE RD9.1E-W	
< FILTER >			
FL701	1-236-163-11	ENCAPSULATED COMPONENT (E70VP/VP-S)	
FL702	1-236-163-11	ENCAPSULATED COMPONENT (E70VP/VP-S)	
FL705	1-236-163-11	ENCAPSULATED COMPONENT (E70VP/VP-S)	
FL751	1-236-163-11	ENCAPSULATED COMPONENT (E70VP/VP-S)	
FL752	1-236-163-11	ENCAPSULATED COMPONENT (E70VP/VP-S)	
FL755	1-236-163-11	ENCAPSULATED COMPONENT (E70VP/VP-S)	
< IC >			
IC701	8-759-009-06	IC MC14052BF	
IC702	8-759-924-46	IC BA4560F	
IC703	8-759-009-06	IC MC14052BF	
IC706	1-809-952-12	IC MODULE, CANAL PLUS BX8179A	(E70B)
< JUMPER RESISTOR >			
JR701	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70AP/B/ES/IT/NC/UY)			
JR702	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70AP/B/ES/IT/NC/UY)			
JR703	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR704	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR705	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70AP/B/ES/IT/NC/UY)			
JR706	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70B)			
JR707	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR713	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70B)			
JR714	1-216-295-00	METAL CHIP 0 5% 1/10W	
JR715	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR717	1-216-296-00	METAL CHIP 0 5% 1/8W	(E70B)
JR718	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR719	1-216-296-00	METAL CHIP 0 5% 1/8W	(E70B)

Ref. No.	Part No.	Description	Remark
JR720	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR721	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR722	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR751	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70AP/B/ES/IT/NC/UY)			
JR752	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70AP/B/ES/IT/NC/UY)			
JR753	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR756	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70B)			
JR754	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR755	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70AP/B/ES/IT/NC/UY)			
JR763	1-216-295-00	METAL CHIP 0 5% 1/10W	
(E70VP/VP-S)			
JR764	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR765	1-216-295-00	METAL CHIP 0 5% 1/10W	(E70B)
JR902	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70B)			
< COIL >			
L701	1-408-421-00	INDUCTOR 100uH	
L702	1-408-421-00	INDUCTOR 100uH	
L703	1-408-421-00	INDUCTOR 100uH	(E70B)
L901	1-408-421-00	INDUCTOR 100uH	
< TRANSISTOR >			
Q703	8-729-424-56	TRANSISTOR UN211L	
Q704	8-729-421-19	TRANSISTOR UN2213	
Q901	8-729-216-22	TRANSISTOR 2SA1162-G	
Q902	8-729-216-22	TRANSISTOR 2SA1162-G	(E70B)
Q959	8-729-422-27	TRANSISTOR 2SD601A-Q	(E70B)
< RESISTOR >			
R701	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R702	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R703	1-249-433-11	CARBON 22K 5% 1/4W	(E70UY)
R704	1-249-435-11	CARBON 33K 5% 1/4W	(E70UY)
R705	1-216-081-00	METAL CHIP 22K 5% 1/10W	(E70UY)
R706	1-216-085-00	METAL CHIP 33K 5% 1/10W	(E70UY)
R706	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70UY)			
R707	1-216-081-00	METAL CHIP 22K 5% 1/10W	
(EXCEPT E70B)			
R707	1-216-089-00	METAL CHIP 47K 5% 1/10W	(E70B)
R708	1-216-083-00	METAL CHIP 27K 5% 1/10W	
(EXCEPT E70B)			
R708	1-216-091-00	METAL CHIP 56K 5% 1/10W	(E70B)
R715	1-216-041-00	METAL CHIP 470 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R719	1-216-041-00	METAL CHIP 470 5% 1/10W	(E70B)
R720	1-249-426-11	CARBON 5.6K 5% 1/4W	
R721	1-216-075-00	METAL CHIP 12K 5% 1/10W	(E70B)
R722	1-216-075-00	METAL CHIP 12K 5% 1/10W	(E70B)
R723	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R724	1-216-049-00	METAL CHIP 1K 5% 1/10W	
R725	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R726	1-216-043-00	METAL CHIP 560 5% 1/10W	
R728	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R729	1-216-043-00	METAL CHIP 560 5% 1/10W	(E70B)
R751	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R752	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R753	1-216-081-00	METAL CHIP 22K 5% 1/10W	(E70UY)
R754	1-216-085-00	METAL CHIP 33K 5% 1/10W	(E70UY)
R754	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70UY)			
R755	1-216-081-00	METAL CHIP 22K 5% 1/10W	(E70UY)
R756	1-216-085-00	METAL CHIP 33K 5% 1/10W	(E70UY)
R756	1-216-295-00	METAL CHIP 0 5% 1/10W	
(EXCEPT E70UY)			
R757	1-216-081-00	METAL CHIP 22K 5% 1/10W	
(EXCEPT E70B)			
R757	1-216-089-00	METAL CHIP 47K 5% 1/10W	(E70B)
R758	1-216-083-00	METAL CHIP 27K 5% 1/10W	
(EXCEPT E70B)			
R758	1-216-091-00	METAL CHIP 56K 5% 1/10W	(E70B)
R765	1-216-041-00	METAL CHIP 470 5% 1/10W	
R769	1-216-041-00	METAL CHIP 470 5% 1/10W	(E70B)
R770	1-249-426-11	CARBON 5.6K 5% 1/4W	
R776	1-216-043-00	METAL CHIP 560 5% 1/10W	
R778	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R779	1-216-043-00	METAL CHIP 560 5% 1/10W	(E70B)
R901	1-216-037-00	METAL CHIP 330 5% 1/10W	
R903	1-249-408-11	CARBON 180 5% 1/4W	F
R904	1-247-811-31	CARBON 150 5% 1/4W	
(EXCEPT E70B)			
R904	1-249-406-11	CARBON 120 5% 1/4W	F (E70B)
R905	1-216-019-00	METAL CHIP 56 5% 1/10W	(E70B)
R905	1-216-021-00	METAL CHIP 68 5% 1/10W	
(EXCEPT E70B)			
R906	1-216-021-00	METAL CHIP 68 5% 1/10W	(E70B)
R907	1-249-417-11	CARBON 1K 5% 1/4W	F (E70B)
R908	1-216-022-00	METAL CHIP 75 5% 1/10W	
R909	1-216-049-00	METAL CHIP 1K 5% 1/10W	(E70B)
R951	1-249-417-11	CARBON 1K 5% 1/4W	F (E70B)
R952	1-249-417-11	CARBON 1K 5% 1/4W	F (E70B)
R953	1-247-807-31	CARBON 100 5% 1/4W	(E70B)
R954	1-247-807-31	CARBON 100 5% 1/4W	(E70B)
R955	1-247-807-31	CARBON 100 5% 1/4W	(E70B)

Ref. No.	Part No.	Description	Remark
R956	1-247-807-31	CARBON 100 5% 1/4W (E70B)	
R957	1-247-807-31	CARBON 100 5% 1/4W (E70B)	
R958	1-247-807-31	CARBON 100 5% 1/4W (E70B)	
R959	1-247-807-31	CARBON 100 5% 1/4W (E70B)	

*	A-6782-310-A	MA-181 BOARD, COMPLETE	

(E70AP/ES/IT/NC/VP)			
*	A-6782-311-A	MA-181 BOARD, COMPLETE (E70B)	

*	A-6782-320-A	MA-181 BOARD, COMPLETE (E70UY)	

*	A-6782-339-A	MA-181 BOARD, COMPLETE (E70VP-S)	

(Ref. No. 2, 000Series)			
< CAPACITOR >			
C001	1-161-494-00	CERAMIC 0.022uF 25V	
C002	1-161-494-00	CERAMIC 0.022uF 25V	
C003	1-124-261-00	ELECT 10uF 20% 50V	
C004	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C006	1-124-589-11	ELECT 47uF 20% 16V	
C008	1-164-159-11	CERAMIC 0.1uF 50V	
C009	1-164-159-11	CERAMIC 0.1uF 50V	
C022	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C025	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C026	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C101	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C102	1-124-126-00	ELECT 47uF 20% 10V	
C103	1-162-849-11	CERAMIC 0.068uF 10% 16V	
C104	1-126-233-11	ELECT 22uF 20% 50V	
C105	1-124-443-00	ELECT 100uF 20% 10V	
C106	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C107	1-162-835-11	CERAMIC 0.0047uF 10% 16V	
C108	1-164-159-11	CERAMIC 0.1uF 50V	
C109	1-124-925-11	ELECT 2.2uF 20% 100V	
C201	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C202	1-124-589-11	ELECT 47uF 20% 16V	
C203	1-126-101-11	ELECT 100uF 20% 16V	
C204	1-137-399-11	FILM 0.1uF 5% 50V	
C205	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C206	1-126-233-11	ELECT 22uF 20% 50V	
C207	1-137-372-11	FILM 0.022uF 5% 50V	
C210	1-126-176-11	ELECT 220uF 20% 10V	
C211	1-162-205-31	CERAMIC 18PF 5% 50V	
C212	1-162-205-31	CERAMIC 18PF 5% 50V	
C213	1-164-159-11	CERAMIC 0.1uF 50V	

Ref. No.	Part No.	Description	Remark
C214	1-162-294-31	CERAMIC 0.001uF 10% 50V	
C215	1-161-057-00	CERAMIC 0.033uF 10% 50V	
C216	1-164-159-11	CERAMIC 0.1uF 50V	
C299	1-162-282-31	CERAMIC 100PF 10% 50V	
C351	1-124-907-11	ELECT 10uF 20% 50V	
C353	1-124-261-00	ELECT 10uF 20% 50V (E70UY)	
C354	1-164-159-11	CERAMIC 0.1uF 50V (E70UY)	
C355	1-124-261-00	ELECT 10uF 20% 50V (E70UY)	
C356	1-124-261-00	ELECT 10uF 20% 50V	
C361	1-162-282-31	CERAMIC 100PF 10% 50V	
C362	1-162-282-31	CERAMIC 100PF 10% 50V	
C364	1-162-306-11	CERAMIC 0.01uF 20% 16V (E70UY)	
C366	1-162-282-31	CERAMIC 100PF 10% 50V	
C401	1-164-084-11	CERAMIC 820PF 10% 50V	
C402	1-164-092-11	CERAMIC 0.0033uF 10% 25V	
C403	1-124-902-00	ELECT 0.47uF 20% 50V	
C404	1-124-907-11	ELECT 10uF 20% 50V	
C405	1-137-370-11	FILM 0.01uF 5% 50V	
C406	1-164-159-11	CERAMIC 0.1uF 50V	
C407	1-124-903-11	ELECT 1uF 20% 50V	
C409	1-164-159-11	CERAMIC 0.1uF 50V	
C410	1-124-907-11	ELECT 10uF 20% 50V	
C411	1-124-252-00	ELECT 0.33uF 20% 50V	
C414	1-130-488-00	MYLAR 0.027uF 5% 50V	
C415	1-124-903-11	ELECT 1uF 20% 50V	
C416	1-130-486-00	MYLAR 0.018uF 10% 50V	
C417	1-104-792-51	ELECT 33uF 20% 16V	
C418	1-104-792-51	ELECT 33uF 20% 16V	
C421	1-162-290-31	CERAMIC 470PF 10% 50V	
C852	1-162-306-11	CERAMIC 0.01uF 20% 16V	
C854	1-164-087-11	CERAMIC 0.0015uF 10% 50V	
C856	1-104-696-11	FILM 0.015uF 5% 100V	
C858	1-104-695-11	FILM 330PF 5% 100V	
C859	1-126-101-11	ELECT 100uF 20% 16V (E70UY)	
C859	1-124-120-11	ELECT 220uF 20% 25V	
< CONNECTOR >			
CN002	1-569-335-11	CONNECTOR, BOARD TO BOARD 9P	
CN003	1-691-643-11	CONNECTOR, BOARD TO BOARD	
CN005	1-506-468-11	PIN, CONNECTOR 3P	
CN006	1-569-333-11	CONNECTOR, BOARD TO BOARD 3P	
CN101	1-506-468-11	PIN, CONNECTOR 3P	
CN201	1-573-842-11	CONNECTOR, BOARD TO BOARD 10P	
CN301	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN302	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
CN303	1-573-846-11	CONNECTOR, BOARD TO BOARD 14P	
CN304	1-573-852-11	CONNECTOR, BOARD TO BOARD 20P	
* CN307	1-560-891-00	PIN, CONNECTOR 3P (E70UY)	
CN402	1-695-821-11	CONNECTOR, BOARD TO BOARD 12P	

Ref. No.	Part No.	Description	Remark
* CN405	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P	
* CN406	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P	
* CN801	1-691-409-11	CONNECTOR, BOARD TO BOARD 10P	
* CN802	1-764-210-11	CONNECTOR, BOARD TO BOARD 12P	
* CN803	1-764-211-11	CONNECTOR, BOARD TO BOARD 13P	
CN854	1-506-469-11	PIN, CONNECTOR 4P	
CN855	1-506-468-11	PIN, CONNECTOR 3P	
* CN857	1-560-891-00	PIN, CONNECTOR 3P	
< DIODE >			
D001	8-719-985-00	DIODE GL451VS1	
D004	8-719-109-93	DIODE RD6.2ES-B2	
D005	8-719-109-93	DIODE RD6.2ES-B2	
D006	8-719-109-93	DIODE RD6.2ES-B2	
D007	8-719-109-93	DIODE RD6.2ES-B2	
D201	8-719-911-19	DIODE 1SS119	
D202	8-719-109-74	DIODE RD4.3ES-B1	
D203	8-719-109-81	DIODE RD4.7ES-B2	
D204	8-719-200-82	DIODE 11ES2	
D206	8-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119 (E70B)	
D302	8-719-911-19	DIODE 1SS119 (E70B)	
D351	8-719-911-19	DIODE 1SS119 (E70UY)	
D352	8-719-911-19	DIODE 1SS119 (E70UY)	
D353	8-719-911-19	DIODE 1SS119	
D401	8-719-911-19	DIODE 1SS119	
D402	1-249-417-11	CARBON 1K 5% 1/4W F	
D403	8-719-911-19	DIODE 1SS119	
< IC >			
IC002	8-759-912-77	IC uPC324C	
IC101	8-759-246-14	IC TA8823N	
△IC201	8-759-983-45	IC BA6238A	
IC202	8-759-503-91	IC TL082ACP	
IC203	8-752-848-85	IC CXP80732-011Q	
IC303	8-759-198-39	IC HD49783	
IC305	8-759-927-56	IC BA7021	
IC306	8-759-710-40	IC NJM2234D (E70UY)	
IC401	8-759-089-82	IC BA7790LS	
< COIL >			
L101	1-414-189-31	INDUCTOR 100uH	
L201	1-414-185-41	INDUCTOR 22uH	
L202	1-414-183-41	INDUCTOR 10uH	
L351	1-410-509-11	INDUCTOR 10uH (E70UY)	
L352	1-410-509-11	INDUCTOR 10uH	
L401	1-410-071-11	INDUCTOR 10mH	
L402	1-414-183-41	INDUCTOR 10uH	
L852	1-410-687-11	INDUCTOR 1.2mH	

Ref. No.	Part No.	Description	Remark
L853	1-410-687-11	INDUCTOR 1.2mH (EXCEPT E70UY)	
< PHOTO INTERRUPTER >			
PH001	8-759-144-33	IC PS6002	
PH002	8-759-144-33	IC PS6002	
< IC LINK >			
△PS201	1-532-685-00	LINK, IC	
△PS851	1-532-679-00	LINK, IC	
< TRANSISTOR >			
Q001	8-729-926-31	TRANSISTOR PT483F1S	
Q002	8-729-926-31	TRANSISTOR PT483F1S	
Q201	8-729-422-71	TRANSISTOR UN4111	
Q301	8-729-900-89	TRANSISTOR DTC144ES (E70B/VP-S)	
Q302	8-729-900-65	TRANSISTOR DTA144ES	
Q306	8-729-900-65	TRANSISTOR DTA144ES	
Q851	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q	
Q853	8-729-119-78	TRANSISTOR 2SC2785-HFE (E70B/UY)	
Q854	8-729-422-57	TRANSISTOR UN4111	
Q855	8-729-900-65	TRANSISTOR DTA144ES	
(E70AP/ES/IT/NC/VP/VP-S)			
< RESISTOR >			
R001	1-249-423-11	CARBON 3.3K 5% 1/4W F	
R002	1-249-423-11	CARBON 3.3K 5% 1/4W F	
R003	1-249-426-11	CARBON 5.6K 5% 1/4W	
R004	1-249-426-11	CARBON 5.6K 5% 1/4W	
R005	1-249-415-11	CARBON 680 5% 1/4W F	
R006	1-249-441-11	CARBON 100K 5% 1/4W	
R007	1-249-441-11	CARBON 100K 5% 1/4W	
R008	1-249-425-11	CARBON 4.7K 5% 1/4W F	
R009	1-249-408-11	CARBON 180 5% 1/4W F	
R010	1-249-422-11	CARBON 2.7K 5% 1/4W F	
R011	1-249-437-11	CARBON 47K 5% 1/4W	
R012	1-249-421-11	CARBON 2.2K 5% 1/4W F	
R015	1-249-437-11	CARBON 47K 5% 1/4W	
R016	1-249-421-11	CARBON 2.2K 5% 1/4W F	
R017	1-249-429-11	CARBON 10K 5% 1/4W	
R018	1-249-429-11	CARBON 10K 5% 1/4W	
R019	1-249-429-11	CARBON 10K 5% 1/4W	
R020	1-249-429-11	CARBON 10K 5% 1/4W	
R023	1-249-414-11	CARBON 560 5% 1/4W F	
R024	1-249-437-11	CARBON 47K 5% 1/4W	
R025	1-249-437-11	CARBON 47K 5% 1/4W	
R101	1-247-901-11	CARBON 820K 5% 1/4W	
R102	1-249-439-11	CARBON 68K 5% 1/4W	
R103	1-249-441-11	CARBON 100K 5% 1/4W	
R104	1-249-441-11	CARBON 100K 5% 1/4W	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

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Ref. No.	Part No.	Description	Remark
R105	1-249-435-11	CARBON 33K 5% 1/4W	
R106	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R107	1-249-411-11	CARBON 330 5% 1/4W	
R108	1-247-807-31	CARBON 100 5% 1/4W	
R109	1-215-429-00	METAL 2.2K 1% 1/6W	
R110	1-249-417-11	CARBON 1K 5% 1/4W	F
R126	1-215-429-00	METAL 2.2K 1% 1/6W	
R203	1-249-429-11	CARBON 10K 5% 1/4W	
R204	1-249-429-11	CARBON 10K 5% 1/4W	
R205	1-249-429-11	CARBON 10K 5% 1/4W	
R206	1-249-436-11	CARBON 39K 5% 1/4W	
R208	1-249-417-11	CARBON 1K 5% 1/4W	F
R209	1-247-874-11	CARBON 62K 5% 1/4W	
R210	1-249-431-11	CARBON 15K 5% 1/4W	
R211	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R212	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R213	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R214	1-247-885-00	CARBON 180K 5% 1/4W	
R216	1-249-417-11	CARBON 1K 5% 1/4W	F
R217	1-249-433-11	CARBON 22K 5% 1/4W	
R218	1-249-436-11	CARBON 39K 5% 1/4W	
R219	1-249-433-11	CARBON 22K 5% 1/4W	
R220	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R222	1-249-422-11	CARBON 2.7K 5% 1/4W	F
R224	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R225	1-249-437-11	CARBON 47K 5% 1/4W	
R226	1-249-437-11	CARBON 47K 5% 1/4W	
R301	1-249-429-11	CARBON 10K 5% 1/4W	(E70B/VP-S)
R311	1-249-429-11	CARBON 10K 5% 1/4W	
R351	1-249-429-11	CARBON 10K 5% 1/4W	(E70UY)
R355	1-249-429-11	CARBON 10K 5% 1/4W	
R356	1-249-429-11	CARBON 10K 5% 1/4W	
R359	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R362	1-249-417-11	CARBON 1K 5% 1/4W	F
R363	1-249-417-11	CARBON 1K 5% 1/4W	F
R364	1-249-434-11	CARBON 27K 5% 1/4W	
R365	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R366	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R367	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R368	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R369	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R370	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R371	1-249-423-11	CARBON 3.3K 5% 1/4W	F
R372	1-249-427-11	CARBON 6.8K 5% 1/4W	F
R373	1-249-425-11	CARBON 4.7K 5% 1/4W	F
R374	1-249-424-11	CARBON 3.9K 5% 1/4W	F
R376	1-249-401-11	CARBON 47 5% 1/4W	F
R377	1-249-401-11	CARBON 47 5% 1/4W	F (E70UY)
R378	1-247-807-31	CARBON 100 5% 1/4W	(E70UY)

Ref. No.	Part No.	Description	Remark
R401	1-249-441-11	CARBON 100K 5% 1/4W	
R402	1-249-438-11	CARBON 56K 5% 1/4W	
R403	1-249-409-11	CARBON 220 5% 1/4W	F
R404	1-247-891-00	CARBON 330K 5% 1/4W	
R405	1-249-430-11	CARBON 12K 5% 1/4W	
R406	1-249-426-11	CARBON 5.6K 5% 1/4W	
R407	1-249-435-11	CARBON 33K 5% 1/4W	
R408	1-249-432-11	CARBON 18K 5% 1/4W	(EXCEPT E70VP-S)
R408	1-249-434-11	CARBON 27K 5% 1/4W	(E70VP-S)
R409	1-259-880-11	CARBON 2.2M 5% 1/4W	
R410	1-249-429-11	CARBON 10K 5% 1/4W	
R411	1-249-435-11	CARBON 33K 5% 1/4W	
R418	1-249-417-11	CARBON 1K 5% 1/4W	F
R419	1-247-864-11	CARBON 24K 5% 1/4W	
R420	1-249-410-11	CARBON 270 5% 1/4W	F
R421	1-249-417-11	CARBON 1K 5% 1/4W	F
R422	1-249-426-11	CARBON 5.6K 5% 1/4W	
R423	1-249-437-11	CARBON 47K 5% 1/4W	
R424	1-249-434-11	CARBON 27K 5% 1/4W	
R425	1-249-441-11	CARBON 100K 5% 1/4W	
R426	1-249-434-11	CARBON 27K 5% 1/4W	
R854	1-215-439-00	METAL 5.6K 1% 1/6W	
R855	1-215-423-00	METAL 1.2K 1% 1/6W	
R858	1-249-437-11	CARBON 47K 5% 1/4W	
R859	1-249-429-11	CARBON 10K 5% 1/4W	
R860	1-249-435-11	CARBON 33K 5% 1/4W	
R861	1-249-440-11	CARBON 82K 5% 1/4W	
R866	1-249-393-11	CARBON 10 5% 1/4W	F
R867	1-249-438-11	CARBON 56K 5% 1/4W	(E70B)
R868	1-249-433-11	CARBON 22K 5% 1/4W	
R869	1-249-389-11	CARBON 4.7 5% 1/4W	F
R899	1-249-417-11	CARBON 1K 5% 1/4W	F
< VARIABLE RESISTOR >			
RV201	1-238-019-11	RES, ADJ, CARBON 47K	
RV202	1-238-019-11	RES, ADJ, CARBON 47K	
RV851	1-241-767-21	RES, ADJ, CARBON 100K	
< SWITCH >			
S001	1-570-953-11	SWITCH, PUSH (1 KEY) (CASSETTE UP/DOWN)	
S002	1-570-953-11	SWITCH, PUSH (1 KEY) (REC PROOF)	
< TRANSFORMER >			
T851	1-423-414-11	TRANSFORMER, BIAS OSCILLATION	

Ref. No.	Part No.	Description	Remark
< VIBRATOR >			
X201	1-578-774-11	VIBRATOR, CRYSTAL (12MHz)	
< LIQUID CRYSTAL >			
A-6721-632-A	MF-242	BOARD, COMPLETE (EXCEPT E70B)	
A-6721-634-A	MF-242	BOARD, COMPLETE (E70B)	(Ref. No. 5, 000Series)
3-957-314-11	HOLDER, LCD		
3-957-327-01	RIVET, PUSH		
3-957-338-01	ILLUMINATOR		
3-697-607-01	HOLDER, LED		
< CAPACITOR >			
C301	1-126-157-11	ELECT 10uF 20% 16V	
C302	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C303	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C304	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C305	1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C306	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
< CONNECTOR >			
CN301	1-750-192-21	CONNECTOR, BOARD TO BOARD 22P	
CN303	1-695-329-31	PIN, CONNECTOR (PC BOARD) 6P	
CN304	1-564-014-51	PIN, CONNECTOR 4P	
< DIODE >			
D301	8-719-940-99	DIODE SLR-34VC3 (REC)	
D302	8-719-940-99	DIODE SLR-34VC3 (TIMER)	
D303	8-719-946-30	LED SLR34DC3 (PAUSE)	
D304	8-719-812-32	LED TLY123 (HI-SPEED REWIND)	
D305	8-719-801-78	DIODE 1SS184	
D306	8-719-109-96	DIODE RD6.8ES-B1	
D307	8-719-109-96	DIODE RD6.8ES-B1	
D308	8-719-109-96	DIODE RD6.8ES-B1	
D309	8-719-109-96	DIODE RD6.8ES-B1	
D310	8-719-109-96	DIODE RD6.8ES-B1	
< IC >			
IC301	8-759-249-78	IC LC75850E	
< JUMPER RESISTOR >			
JR302	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR303	1-216-296-00	METAL CHIP 0 5% 1/8W	

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MF-242

Ref. No.	Part No.	Description	Remark
< COIL >			
L301	1-408-401-00	INDUCTOR 2.2uH	
L302	1-410-509-11	INDUCTOR 10uH	
< LIQUID CRYSTAL >			
LC301	1-810-354-11	DISPLAY PANEL, LIQUID CRYSTAL (EXCEPT E70B)	
LC301	1-810-355-11	DISPLAY PANEL, LIQUID CRYSTAL (E70B)	
< TRANSISTOR >			
Q301	8-729-421-19	TRANSISTOR UN2213	
Q302	8-729-421-19	TRANSISTOR UN2213	
Q303	8-729-421-19	TRANSISTOR UN2213	
Q304	8-729-421-19	TRANSISTOR UN2213	
Q305	8-729-421-19	TRANSISTOR UN2213	
< RESISTOR >			
R301	1-249-421-11	CARBON 2.2K 5% 1/4W	F
R302	1-249-429-11	CARBON 10K 5% 1/4W	
R303	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R304	1-216-035-00	METAL CHIP 270 5% 1/10W	
R305	1-216-035-00	METAL CHIP 270 5% 1/10W	
R306	1-216-037-00	METAL CHIP 330 5% 1/10W	
R307	1-249-408-11	CARBON 180 5% 1/4W	F
R308	1-216-031-00	METAL CHIP 180 5% 1/10W	
R309	1-216-031-00	METAL CHIP 180 5% 1/10W	
R310	1-216-031-00	METAL CHIP 180 5% 1/10W	
R311	1-216-031-00	METAL CHIP 180 5% 1/10W	
R312	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R313	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R317	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R318	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R321	1-216-262-00	METAL GLAZE 470K 5% 1/8W	
R322	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R323	1-216-262-00	METAL GLAZE 470K 5% 1/8W	
< SWITCH >			
S301	1-571-977-11	SWITCH, TACTIL (PAUSE)	
S302	1-571-977-11	SWITCH, TACTIL (HI-SPEED REWIND)	
S303	1-692-726-11	SWITCH, ROTARY (LED) (PLAY/STOP/REW/FF)	

Ref. No.	Part No.	Description	Remark
*	A-6720-592-A MF-243	BOARD, COMPLETE (E70UY)	

*	A-6720-631-A MF-243	BOARD, COMPLETE (EXCEPT E70UY)	

(Ref. No. 5,000Series)			
< CAPACITOR >			
C605	1-163-031-11	CERAMIC CHIP 0.01uF	50V
< CONNECTOR >			
CN601	1-695-820-11	CONNECTOR, BOARD TO BOARD 12P	
< DIODE >			
D601	8-719-970-67	DIODE SLR-34MCA49	
D602	8-719-970-67	DIODE SLR-34MCA49	
D603	8-719-940-99	LED SLR34VC3	
D606	8-719-108-12	DIODE RD9.1E-W (E70UY)	
D607	8-719-108-12	DIODE RD9.1E-W (E70UY)	
D608	8-719-108-12	DIODE RD9.1E-W (E70UY)	
D610	8-719-109-93	DIODE RD6.2ES-B2 (E70UY)	
< IC >			
IC601	1-466-833-11	IC RAY-CATCHER BLOCK, REMOCON	
< JACK >			
PJ601	1-695-865-11	JACK, PIN 3P (E70UY)	
< TRANSISTOR >			
Q601	8-729-421-19	TRANSISTOR UN2213	
Q602	8-729-216-22	TRANSISTOR 2SA1162-G	
< RESISTOR >			
R601	1-216-238-91	METAL GLAZE 47K 5%	1/8W
R602	1-216-022-00	METAL CHIP 75 5%	1/10W (E70UY)
R603	1-216-295-00	METAL CHIP 0 5%	1/10W (E70UY)
R604	1-216-295-00	METAL CHIP 0 5%	1/10W (E70UY)
R605	1-216-170-00	METAL GLAZE 68 5%	1/8W
R606	1-216-031-00	METAL CHIP 180 5%	1/10W (EXCEPT E70UY)
R606	1-216-180-00	METAL GLAZE 180 5%	1/8W (E70UY)
R607	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
< SWITCH >			
S601	1-571-977-11	SWITCH, TACTIL (POWER)	
S602	1-571-977-11	SWITCH, TACTIL (EJECT)	

Ref. No.	Part No.	Description	Remark
*	A-6781-298-A PD-37	BOARD, COMPLETE (E70AP)	

*	A-6781-309-A PD-37	BOARD, COMPLETE (E70UY)	

(Ref. No. 9,000Series)			
< CAPACITOR >			
C003	1-163-038-11	CERAMIC CHIP 0.1uF	25V (E70AP/UY)
C004	1-124-589-11	ELECT 47uF	20% 16V (E70AP/UY)
C005	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V (E70AP)
C006	1-163-227-11	CERAMIC CHIP 10PF	0.5PF 50V (E70AP)
C007	1-163-038-11	CERAMIC CHIP 0.1uF	25V (E70AP)
C008	1-124-589-11	ELECT 47uF	20% 16V (E70AP)
C009	1-164-232-11	CERAMIC CHIP 0.01uF	50V (E70AP)
C010	1-164-232-11	CERAMIC CHIP 0.01uF	50V (E70AP)
C011	1-164-232-11	CERAMIC CHIP 0.01uF	50V (E70AP)
C012	1-126-301-11	ELECT 1uF	20% 50V (E70AP)
C014	1-163-038-11	CERAMIC CHIP 0.1uF	25V (E70AP)
< CONNECTOR >			
* CN001	1-565-438-11	SOCKET, CONNECTOR (PCB) 10P	(E70AP/UY)
< DIODE >			
D001	8-719-801-48	DIODE 1SS193 (E70AP)	
D002	8-719-801-48	DIODE 1SS193 (E70AP)	
D003	8-719-911-19	DIODE 1SS119 (E70AP)	
< IC >			
IC001	8-752-845-47	IC CXP80316-025Q (E70AP/UY)	
IC002	8-759-168-94	IC MV1820E-CG-MPEE (E70AP)	
IC003	8-759-504-44	IC MM1031XMR (E70AP)	
< JUMPER RESISTOR >			
JR001	1-216-295-00	METAL CHIP 0 5%	1/10W (E70AP/UY)
JR002	1-216-296-00	METAL CHIP 0 5%	1/8W (E70AP)
< COIL >			
L001	1-410-521-11	INDUCTOR 100uH (E70AP/UY)	
L002	1-410-509-11	INDUCTOR 10uH (E70AP)	
< RESISTOR >			
R001	1-216-089-00	METAL CHIP 47K 5%	1/10W (E70AP/UY)
R002	1-216-089-00	METAL CHIP 47K 5%	1/10W (E70AP/UY)
R003	1-216-073-00	METAL CHIP 10K 5%	1/10W (E70AP)
R004	1-216-073-00	METAL CHIP 10K 5%	1/10W (E70AP)
R005	1-216-073-00	METAL CHIP 10K 5%	1/10W (E70AP)

Ref. No.	Part No.	Description	Remark
< VIBRATOR >			
X001	1-579-125-11	VIBRATOR, CERAMIC (8MHz) (E70AP/UY)	
X002	1-579-971-11	VIBRATOR, CRYSTAL (27.75MHz) (E70AP)	

*	A-6720-633-A PL-24	BOARD, COMPLETE	

(Ref. No. 5,000Series)			
< CONNECTOR >			
CN601	1-506-469-11	PIN, CONNECTOR 4P	
< PILOT LAMP >			
PL601	1-517-254-11	LAMP, PILOT	
PL602	1-517-254-11	LAMP, PILOT	
PL603	1-517-254-11	LAMP, PILOT	

*△	A-6727-570-A PT-96	BOARD, COMPLETE (E70UY)	

*△	A-6727-571-A PT-96	BOARD, COMPLETE (E70AP)	

*△	A-6727-572-A PT-96	BOARD, COMPLETE (E70ES/NC)	

*△	A-6727-573-A PT-96	BOARD, COMPLETE (E70B)	

*△	A-6727-574-A PT-96	BOARD, COMPLETE (E70VP/VP-S)	

*△	A-6727-575-A PT-96	BOARD, COMPLETE (E70IT)	

(Ref. No. 3,000Series)			
1-533-293-11 FUSE HOLDER			
* 3-951-893-01 HEAT SINK			
7-685-646-81 SCREW +BVTP 3X8 TYPE2			
< BUZZER >			
BZ401	1-529-080-11	BUZZER, PIEZOELECTRIC	
< CAPACITOR >			
△C101	1-104-706-11	FILM 0.22uF	20% 250V
△C102	1-104-705-11	FILM 0.1uF	20% 250V
△C103	1-107-405-11	ELECT 68uF	20% 400V
△C104	1-161-741-00	CERAMIC 0.001uF	10% 400V
△C105	1-161-741-00	CERAMIC 0.001uF	10% 400V
△C106	1-161-741-00	CERAMIC 0.001uF	10% 400V
△C107	1-161-741-00	CERAMIC 0.001uF	10% 400V

Ref. No.	Part No.	Description	Remark
△C108	1-161-741-00	CERAMIC 0.001uF	10% 400V
C121	1-126-103-11	ELECT 470uF	20% 16V
C122	1-124-471-00	ELECT 1000uF	20% 6.3V
C125	1-126-233-11	ELECT 22uF	20% 50V
C131	1-124-120-11	ELECT 220uF	20% 25V
C132	1-126-233-11	ELECT 22uF	20% 50V
C141	1-124-477-11	ELECT 47uF	20% 25V
C142	1-126-101-11	ELECT 100uF	20% 16V
C152	1-124-443-00	ELECT 100uF	20% 10V
C161	1-124-126-00	ELECT 47uF	20% 10V
C162	1-124-442-00	ELECT 330uF	20% 6.3V
C171	1-124-442-00	ELECT 330uF	20% 6.3V
C181	1-124-589-11	ELECT 47uF	20% 16V
C182	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C183	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C184	1-126-157-11	ELECT 10uF	20% 16V
C185	1-124-261-00	ELECT 10uF	20% 50V
C186	1-124-261-00	ELECT 10uF	20% 50V
C187	1-124-261-00	ELECT 10uF	20% 50V
C189	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C190	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
C195	1-124-589-11	ELECT 47uF	20% 16V
C196	1-124-589-11	ELECT 47uF	20% 16V
C197	1-124-589-11	ELECT 47uF	20% 16V
C404	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C405	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C406	1-125-705-11	CAP, DOUBLE LAYERS 0.22F	
C407	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C408	1-124-442-00	ELECT 330uF	20% 6.3V
C409	1-165-319-11	CERAMIC CHIP 0.1uF	50V
C410	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C411	1-163-234-11	CERAMIC CHIP 20PF	5% 50V
C412	1-163-213-00	CERAMIC CHIP 0.0022uF	5% 50V
C413	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
C414	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C415	1-163-031-11	CERAMIC CHIP 0.01uF	50V
C451	1-124-443-00	ELECT 100uF	20% 10V
C804	1-126-233-11	ELECT 22uF	20% 50V (E70AP/B/IT/VP/VP-S)
C808	1-163-031-11	CERAMIC CHIP 0.01uF	50V (E70AP/B/IT/VP/VP-S)
C809	1-126-101-11	ELECT 100uF	20% 16V (E70AP/B/IT/VP/VP-S)
C810	1-163-031-11	CERAMIC CHIP 0.01uF	50V (E70AP/B/IT/VP/VP-S)
C811	1-124-927-11	ELECT 4.7uF	20% 100V (E70AP/B/IT/VP/VP-S)
C812	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V (E70AP/B/IT/VP/VP-S)

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
C813	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70AP/B/IT/VP/VP-S)
C814	1-124-126-00	ELECT	47uF 20% 10V (E70AP/B/IT/VP/VP-S)
C817	1-164-161-11	CERAMIC CHIP	0.0022uF 10% 100V (E70AP/B/IT/VP/VP-S)
C818	1-165-319-11	CERAMIC CHIP	0.1uF 50V (E70B)
C819	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70AP/B/IT/VP/VP-S)
C820	1-124-126-00	ELECT	47uF 20% 10V (E70AP/B/IT/VP/VP-S)
C824	1-124-907-11	ELECT	10uF 20% 50V (E70AP/IT/VP/VP-S)
C825	1-124-907-11	ELECT	10uF 20% 50V (E70AP/IT/VP/VP-S)
C826	1-124-907-11	ELECT	10uF 20% 50V (E70AP/B/IT/VP/VP-S)
C863	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C865	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C871	1-126-101-11	ELECT	100uF 20% 16V (E70AP/IT/VP/VP-S)
C872	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70AP/IT/VP/VP-S)
C873	1-130-483-00	MYLAR	0.01uF 5% 50V (E70AP/IT/VP/VP-S)
C874	1-124-907-11	ELECT	10uF 20% 50V (E70AP/IT/VP/VP-S)
C875	1-124-907-11	ELECT	10uF 20% 50V (E70AP/IT/VP/VP-S)
< INLET AC >			
△CJ101	1-251-134-11	INLET, AC (NONPOLAR) (AC IN)	
< CONNECTOR >			
CN401	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
CN402	1-569-338-11	CONNECTOR, BOARD TO BOARD 19P	
* CN403	1-750-201-21	CONNECTOR, BOARD TO BOARD 22P	
* CN404	1-565-439-11	PIN, CONNECTOR (PCB) 10P (E70AP/UY)	
CN404	1-573-842-11	CONNECTOR, BOARD TO BOARD 10P (E70VP/VP-S)	
* CN405	1-573-845-11	CONNECTOR, BOARD TO BOARD 13P	
CN801	1-568-787-11	PIN, CONNECTOR 10P (E70ES/NC/UY)	
CN802	1-568-788-21	PIN, CONNECTOR 11P (E70ES/NC/UY)	
< COMPOSITION CIRCUIT BLOCK >			
△CP101	1-413-897-11	POWER BLOCK (EXCEPT E70UY)	
△CP101	1-413-940-11	POWER BLOCK (E70UY)	

Ref. No.	Part No.	Description	Remark
< DIODE >			
△D101	8-719-510-06	DIODE	SIWB60
△D131	8-719-200-82	DIODE	11ES2
D161	8-719-911-19	DIODE	1SS119
D162	8-719-109-85	DIODE	RD5.1ES-B2
△D181	8-719-911-19	DIODE	1SS119
△D182	8-719-911-19	DIODE	1SS119
△D183	8-719-911-19	DIODE	1SS119
△D184	8-719-911-19	DIODE	1SS119
△D195	8-719-911-19	DIODE	1SS119
△D196	8-719-911-19	DIODE	1SS119
△D403	8-719-200-82	DIODE	11ES2
D404	8-719-911-19	DIODE	1SS119
△D801	8-719-110-78	DIODE	RD33ES-B2 (E70AP/B/IT/VP/VP-S)
D802	8-719-800-76	DIODE	1SS226 (E70AP/B/IT/VP/VP-S)
D851	8-719-404-46	DIODE	MA110 (E70AP/B/IT/VP/VP-S)
△D865	8-719-200-82	DIODE	11ES2
< FUSE >			
△F101	1-576-228-11	FUSE (H. B. C.) (T2A 250V)	
< FILTER >			
FL184	1-239-803-11	FILTER, EMI	
FL195	1-239-803-11	FILTER, EMI	
< IC >			
△IC141	8-759-189-48	IC	PQ12RE11
△IC151	8-759-189-49	IC	PQ09NF1S
△IC181	8-759-189-47	IC	MC34151DR2
IC401	8-759-260-65	IC	MB89095-159 (EXCEPT E70UY)
IC401	8-759-267-38	IC	MB89096-130 (E70UY)
IC402	8-759-501-99	IC	ST93C46A81
IC405	8-759-249-28	IC	MM1254XFBE
IC871	8-759-512-95	IC	TDA8415 (E70AP/IT/VP/VP-S)
< JUMPER RESISTOR >			
JR111	1-216-296-00	METAL CHIP	0 5% 1/8W
JR151	1-216-295-00	METAL CHIP	0 5% 1/10W
JR401	1-216-296-00	METAL CHIP	0 5% 1/8W
JR402	1-216-296-00	METAL CHIP	0 5% 1/8W
JR405	1-216-296-00	METAL CHIP	0 5% 1/8W
JR406	1-216-295-00	METAL CHIP	0 5% 1/10W
JR407	1-216-295-00	METAL CHIP	0 5% 1/10W
JR408	1-216-296-00	METAL CHIP	0 5% 1/8W
JR409	1-216-296-00	METAL CHIP	0 5% 1/8W
JR412	1-216-296-00	METAL CHIP	0 5% 1/8W

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Ref. No.	Part No.	Description	Remark
JR801	1-216-295-00	METAL CHIP	0 5% 1/10W (E70AP/B/IT/VP/VP-S)
JR804	1-216-295-00	METAL CHIP	0 5% 1/10W (E70B)
JR805	1-216-295-00	METAL CHIP	0 5% 1/10W (E70B)
JR806	1-216-295-00	METAL CHIP	0 5% 1/10W (E70B)
JR811	1-216-295-00	METAL CHIP	0 5% 1/10W
JR812	1-216-295-00	METAL CHIP	0 5% 1/10W
JR813	1-216-296-00	METAL CHIP	0 5% 1/8W
JR816	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR817	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR818	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR819	1-216-296-00	METAL CHIP	0 5% 1/8W
JR820	1-216-296-00	METAL CHIP	0 5% 1/8W
JR821	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR822	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR823	1-216-295-00	METAL CHIP	0 5% 1/10W
JR824	1-216-295-00	METAL CHIP	0 5% 1/10W
JR825	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR826	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR827	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
JR828	1-216-295-00	METAL CHIP	0 5% 1/10W
JR829	1-216-296-00	METAL CHIP	0 5% 1/8W
JR830	1-216-295-00	METAL CHIP	0 5% 1/10W
JR833	1-216-295-00	METAL CHIP	0 5% 1/10W (E70AP/B/IT/VP/VP-S)
JR834	1-216-296-00	METAL CHIP	0 5% 1/8W (E70AP/B/IT/VP/VP-S)
< COIL >			
△L121	1-403-588-11	CIL, CHOKE 22uH	
△L122	1-403-588-11	CIL, CHOKE 22uH	
L181	1-408-421-00	INDUCTOR 100uH	
L182	1-410-521-11	INDUCTOR 100uH	
L195	1-410-521-11	INDUCTOR 100uH	
L404	1-414-183-41	INDUCTOR 10uH	
L801	1-414-183-31	INDUCTOR 100uH (E70AP/B/IT/VP/VP-S)	
L802	1-414-183-41	INDUCTOR 10uH (E70AP/B/IT/VP/VP-S)	
L803	1-410-501-11	INDUCTOR 2.2uH (E70AP/B/IT/VP/VP-S)	
L804	1-414-183-41	INDUCTOR 10uH (E70AP/B/IT/VP/VP-S)	
L862	1-408-401-00	INDUCTOR 2.2uH	
L871	1-414-183-41	INDUCTOR 10uH (E70AP/IT/VP/VP-S)	

Ref. No.	Part No.	Description	Remark
< LINE FILTER >			
△LF101	1-403-599-11	FILTER, LINE 33MH	
△LF102	1-403-599-11	FILTER, LINE 33MH	
< IC LINK >			
△PS121	1-532-637-00	LINK, IC 1.0A	
△PS123	1-532-675-00	LINK, IC 1.5A	
△PS181	1-532-679-11	LINK, IC 0.6A	
< TRANSISTOR >			
△Q131	8-729-140-93	TRANSISTOR	2SB733-34
Q132	8-729-421-22	TRANSISTOR	UN2211
△Q161	8-729-140-98	TRANSISTOR	2SD773-34
Q451	8-729-018-99	TRANSISTOR	2SD2394-F
Q452	8-729-902-99	TRANSISTOR	DTC114TK-T146
△Q801	8-729-173-38	TRANSISTOR	2SA733-K (E70AP/B/IT/VP/VP-S)
Q802	8-729-422-27	TRANSISTOR	2SD601A-Q (E70AP/B/IT/VP/VP-S)
Q803	8-729-422-27	TRANSISTOR	2SD601A-Q (E70AP/B/IT/VP/VP-S)
Q805	8-729-303-37	TRANSISTOR	2SD655-E (E70AP/B/IT/VP/VP-S)
Q861	8-729-216-22	TRANSISTOR	2SA1162-G
Q862	8-729-421-19	TRANSISTOR	UN2213
Q871	8-729-422-27	TRANSISTOR	2SD601A-Q (E70AP/IT/VP/VP-S)
< RESISTOR >			
R101	1-214-947-00	METAL	2.7M 1% 1/2W
R125	1-249-423-11	CARBON	3.3K 5% 1/4W F (EXCEPT E70B)
R126	1-216-061-00	METAL CHIP	3.3K 5% 1/10W (E70B)
R131	1-249-417-11	CARBON	1K 5% 1/4W F
R132	1-260-099-11	CARBON	1K 5% 1/2W
R133	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R161	1-249-412-11	CARBON	390 5% 1/4W F
R181	1-216-081-00	METAL CHIP	22K 5% 1/10W
R182	1-216-073-00	METAL CHIP	10K 5% 1/10W
R405	1-216-095-00	METAL CHIP	82K 5% 1/10W
R407	1-216-113-00	METAL CHIP	470K 5% 1/10W
R408	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R409	1-216-049-00	METAL CHIP	1K 5% 1/10W
R412	1-216-198-91	METAL GLAZE	1K 5% 1/8W
R421	1-216-198-91	METAL GLAZE	1K 5% 1/8W
R423	1-216-222-00	METAL GLAZE	10K 5% 1/8W
R431	1-216-049-00	METAL CHIP	1K 5% 1/10W
R432	1-216-198-91	METAL GLAZE	1K 5% 1/8W
R433	1-249-417-11	CARBON	1K 5% 1/4W F
R452	1-216-186-00	METAL GLAZE	330 5% 1/8W
R454	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R456	1-216-186-00	METAL GLAZE	330 5% 1/8W
R457	1-216-073-00	METAL CHIP	10K 5% 1/10W

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark		
R458	1-216-186-00	METAL GLAZE	330	5%	1/8W
R460	1-216-073-00	METAL CHIP	10K	5%	1/10W
R462	1-216-296-00	METAL CHIP	0	5%	1/8W
R463	1-249-417-11	CARBON	1K	5%	1/4W F
R464	1-249-417-11	CARBON	1K	5%	1/4W F
R465	1-249-417-11	CARBON	1K	5%	1/4W F
R466	1-249-417-11	CARBON	1K	5%	1/4W F
R467	1-249-417-11	CARBON	1K	5%	1/4W F
R469	1-216-073-00	METAL CHIP	10K	5%	1/10W
R470	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W (E70AP/IT)
R470	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W (E70VP/VP-S)
R470	1-216-230-00	METAL GLAZE	22K	5%	1/8W (E70ES/NC)
R470	1-216-238-91	METAL GLAZE	47K	5%	1/8W (E70B)
R470	1-216-296-00	METAL CHIP	0	5%	1/8W (E70UY)
R471	1-216-073-00	METAL CHIP	10K	5%	1/10W
R473	1-216-049-00	METAL CHIP	1K	5%	1/10W
R474	1-216-049-00	METAL CHIP	1K	5%	1/10W
R475	1-216-049-00	METAL CHIP	1K	5%	1/10W
R478	1-249-417-11	CARBON	1K	5%	1/4W F
R480	1-249-429-11	CARBON	10K	5%	1/4W (E70B)
R484	1-216-049-00	METAL CHIP	1K	5%	1/10W
R485	1-249-417-11	CARBON	1K	5%	1/4W F (E70B)
R487	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70B)
R492	1-216-296-00	METAL CHIP	0	5%	1/8W
R494	1-249-417-11	CARBON	1K	5%	1/4W F
R495	1-249-417-11	CARBON	1K	5%	1/4W F
R496	1-216-073-00	METAL CHIP	10K	5%	1/10W (EXCEPT E70B)
R497	1-216-073-00	METAL CHIP	10K	5%	1/10W (EXCEPT E70B)
R498	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R499	1-216-222-00	METAL GLAZE	10K	5%	1/8W
R801	1-216-198-91	METAL GLAZE	1K	5%	1/8W (E70AP/B/IT/VP/VP-S)
R802	1-216-198-91	METAL GLAZE	1K	5%	1/8W (E70AP/B/IT/VP/VP-S)
R803	1-216-182-91	METAL GLAZE	220	5%	1/8W (E70AP/B/IT/VP/VP-S)
R804	1-216-238-91	METAL GLAZE	47K	5%	1/8W (E70AP/B/IT/VP/VP-S)
R805	1-216-025-00	METAL CHIP	100	5%	1/10W (E70AP/B/IT/VP/VP-S)
R806	1-216-071-00	METAL CHIP	8.2K	5%	1/10W (E70AP/B/IT/VP/VP-S)
R807	1-216-075-00	METAL CHIP	12K	5%	1/10W (E70AP/B/IT/VP/VP-S)
R808	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70AP/B/IT/VP/VP-S)

Ref. No.	Part No.	Description	Remark		
R809	1-216-295-00	METAL CHIP	0	5%	1/10W (E70AP/B/IT/VP/VP-S)
R810	1-216-025-00	METAL CHIP	100	5%	1/10W (E70AP/B/IT/VP/VP-S)
R811	1-216-037-00	METAL CHIP	330	5%	1/10W
R812	1-216-037-00	METAL CHIP	330	5%	1/10W (E70AP/B/IT/VP/VP-S)
R820	1-216-198-91	METAL GLAZE	1K	5%	1/8W (E70B)
R821	1-216-198-91	METAL GLAZE	1K	5%	1/8W (E70B)
R824	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70AP/B/IT/VP/VP-S)
R825	1-216-296-00	METAL CHIP	0	5%	1/8W (E70AP/B/IT/VP/VP-S)
R827	1-216-296-00	METAL CHIP	0	5%	1/8W (E70AP/B/IT/VP/VP-S)
R836	1-216-049-00	METAL CHIP	1K	5%	1/10W (EXCEPT E70B)
R837	1-216-049-00	METAL CHIP	1K	5%	1/10W (EXCEPT E70B)
R838	1-216-041-00	METAL CHIP	470	5%	1/10W (E70B/VP/VP-S)
R838	1-216-295-00	METAL CHIP	0	5%	1/10W (E70AP/ES/IT/NC/UY)
R853	1-216-113-00	METAL CHIP	470K	5%	1/10W (E70AP/B/IT/VP/VP-S)
R861	1-216-077-00	METAL CHIP	15K	5%	1/10W (E70B)
R862	1-216-059-00	METAL CHIP	2.7K	5%	1/10W (E70B)
R862	1-216-081-00	METAL CHIP	22K	5%	1/10W (EXCEPT E70B)
R864	1-216-049-00	METAL CHIP	1K	5%	1/10W
R871	1-216-204-00	METAL GLAZE	1.8K	5%	1/8W (E70AP/IT/VP/VP-S)
R872	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70AP/IT/VP/VP-S)
R873	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70AP/IT/VP/VP-S)
R874	1-216-295-00	METAL CHIP	0	5%	1/10W (E70AP/IT/VP/VP-S)
R875	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70AP/IT/VP/VP-S)
R876	1-216-295-00	METAL CHIP	0	5%	1/10W (E70AP/IT/VP/VP-S)
R877	1-216-049-00	METAL CHIP	1K	5%	1/10W (E70AP/IT/VP/VP-S)
R878	1-216-198-91	METAL GLAZE	1K	5%	1/8W (E70B)
< RF MODULATOR >					
△RF801	1-466-328-11	MODULATOR, RF (RFU-2017)	(E70AP/ES/IT/NC/VP/VP-S)		

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
△RF801	1-466-347-11	MODULATOR, RF (RFU-2024) (E70UY)	
△RF801	1-466-348-11	MODULATOR, RF (RFU-2023) (E70B)	
< VARIABLE RESISTOR >			
RV871	1-241-763-11	RES, ADJ, CARBON 4.7K	(E70AP/IT/VP/VP-S)
< TUNER >			
△TU801	1-693-205-14	TUNER (BTF-3C402) (E70B)	
△TU801	1-693-207-11	TUNER (BTF-3C401) (E70AP/IT/VP/VP-S)	
< VIBRATOR >			
X401	1-579-463-11	VIBRATOR, CRYSTAL 32KHz	
X402	1-579-175-11	VIBRATOR, CERAMIC 10MHz	
X871	1-567-925-11	VIBRATOR, CRYSTAL 10MHz	(E70AP/IT/VP/VP-S)

*	A-6727-542-A	RV-33 BOARD, COMPLETE (E70B)	

*	A-6727-545-A	RV-33 BOARD, COMPLETE	

(E70AP/ES/IT/NC/UY/VP)			
*	A-6727-590-A	RV-33 BOARD, COMPLETE (E70VP-S)	

(Ref. No. 1,000Series)			
*	3-957-421-11	HOLDER, SECAM IC (E70B)	
< CAPACITOR >			
C001	1-163-989-11	CERAMIC CHIP	0.033uF 10% 25V
C002	1-164-699-11	CERAMIC CHIP	0.0033uF 5% 50V
C003	1-124-465-00	ELECT	0.47uF 20% 50V
C004	1-163-100-00	CERAMIC CHIP	20PF 5% 50V
C005	1-163-109-00	CERAMIC CHIP	47PF 5% 50V
C006	1-124-257-00	ELECT	2.2uF 20% 50V
C007	1-163-239-11	CERAMIC CHIP	33PF 5% 50V
C009	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C010	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V
C011	1-124-463-00	ELECT	0.1uF 20% 50V
C012	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C013	1-164-161-11	CERAMIC CHIP	0.0022uF 10% 100V
C016	1-163-095-00	CERAMIC CHIP	12PF 5% 50V
C018	1-126-163-11	ELECT	4.7uF 20% 50V
C019	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C024	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C026	1-126-157-11	ELECT	10uF 20% 16V
C027	1-163-234-11	CERAMIC CHIP	20PF 5% 50V
C029	1-124-465-00	ELECT	0.47uF 20% 50V
C030	1-163-035-00	CERAMIC CHIP	0.047uF 50V

Ref. No.	Part No.	Description	Remark		
C031	1-124-638-11	ELECT	22uF	20%	10V
C032	1-126-162-11	ELECT	3.3uF	20%	50V
C033	1-124-638-11	ELECT	22uF	20%	10V
C034	1-163-035-00	CERAMIC CHIP	0.047uF	50V	
C036	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C038	1-163-087-00	CERAMIC CHIP	4PF	50V	
C039	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C045	1-124-257-00	ELECT	2.2uF	20%	50V
C046	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C047	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C048	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C049	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C050	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C051	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C052	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C053	1-124-465-00	ELECT	0.47uF	20%	50V
C055	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C056	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C057	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C058	1-124-465-00	ELECT	0.47uF	20%	50V
C059	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C060	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C061	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C062	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C063	1-163-035-00	CERAMIC CHIP	0.047uF	50V	
C064	1-124-638-11	ELECT	22uF	20%	10V
C065	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C066	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C067	1-165-320-11	CERAMIC CHIP	0.47uF	10%	16V
C069	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C073	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C074	1-163-125-00	CERAMIC CHIP	220PF	5%	50V (E70B)
C075	1-163-117-00	CERAMIC CHIP	100PF	5%	50V (E70B)
C075	1-163-129-00	CERAMIC CHIP	330PF	5%	50V (EXCEPT E70B)
C079	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C081	1-163-091-00	CERAMIC CHIP	8PF	50V	
C083	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C086	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C087	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C095	1-163-033-00	CERAMIC CHIP	0.022uF	50V (E70B)	
C096	1-163-129-00	CERAMIC CHIP	330PF	5%	50V (E70B)
C098	1-124-638-11	ELECT	22uF	20%	10V
C099	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C101	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C102	1-163-130-00	CERAMIC CHIP	360PF	5%	50V
C120	1-124-638-11	ELECT	22uF	20%	10V
C121	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
C203	1-163-031-11	CERAMIC CHIP	0.01uF	50V	
(E70B/VP-S)					

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
C204	1-126-154-11	ELECT	47uF 20% 6.3V (E70B/VP-S)
C205	1-126-163-11	ELECT	4.7uF 20% 50V (E70B/VP-S)
C206	1-163-035-00	CERAMIC CHIP	0.047uF 50V (E70B/VP-S)
C207	1-124-638-11	ELECT	22uF 20% 10V (E70B/VP-S)
C208	1-163-113-00	CERAMIC CHIP	68PF 5% 50V (E70B/VP-S)
C209	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70B/VP-S)
C260	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C261	1-124-584-00	ELECT	100uF 20% 10V
C262	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C263	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C264	1-124-257-00	ELECT	2.2uF 20% 50V
C265	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C267	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C268	1-163-263-11	CERAMIC CHIP	330PF 5% 50V
C269	1-163-263-11	CERAMIC CHIP	330PF 5% 50V
C270	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C273	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C274	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C275	1-126-160-11	ELECT	1uF 20% 50V
C276	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C278	1-163-113-00	CERAMIC CHIP	68PF 5% 50V (E70B/VP-S)
C701	1-124-638-11	ELECT	22uF 20% 10V (E70B)
C705	1-124-638-11	ELECT	22uF 20% 10V (E70B)
C801	1-163-033-00	CERAMIC CHIP	0.022uF 50V
C802	1-163-033-00	CERAMIC CHIP	0.022uF 50V
C803	1-163-033-00	CERAMIC CHIP	0.022uF 50V
C804	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C805	1-163-033-00	CERAMIC CHIP	0.022uF 50V
C806	1-163-117-00	CERAMIC CHIP	100PF 5% 50V
C807	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C808	1-124-584-00	ELECT	100uF 20% 10V
C809	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C810	1-124-584-00	ELECT	100uF 20% 10V
C811	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C813	1-164-336-11	CERAMIC CHIP	0.33uF 25V
C814	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C815	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C816	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C817	1-163-038-11	CERAMIC CHIP	0.1uF 25V
C818	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C822	1-163-129-00	CERAMIC CHIP	330PF 5% 50V
C826	1-124-229-00	ELECT	33uF 20% 10V
C827	1-163-038-11	CERAMIC CHIP	0.1uF 25V

Ref. No.	Part No.	Description	Remark
C829	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C830	1-163-107-00	CERAMIC CHIP	39PF 5% 50V
C838	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C840	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C842	1-126-160-11	ELECT	1uF 20% 50V
C881	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C882	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C883	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C884	1-163-097-00	CERAMIC CHIP	15PF 5% 50V
C901	1-163-095-00	CERAMIC CHIP	12PF 5% 50V
C902	1-163-033-00	CERAMIC CHIP	0.022uF 50V
C903	1-163-239-11	CERAMIC CHIP	33PF 5% 50V
C904	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C907	1-163-033-00	CERAMIC CHIP	0.022uF 50V
C908	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C909	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C910	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C911	1-163-243-11	CERAMIC CHIP	47PF 5% 50V
C912	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C913	1-163-031-11	CERAMIC CHIP	0.01uF 50V
C914	1-163-117-00	CERAMIC CHIP	100PF 5% 50V
C916	1-216-295-00	METAL CHIP	0 5% 1/10W
C917	1-163-035-00	CERAMIC CHIP	0.047uF 50V
C920	1-163-129-00	CERAMIC CHIP	330PF 5% 50V
C921	1-124-229-00	ELECT	33uF 20% 10V
< FILTER >			
CF201	1-527-943-00	FILTER, CERAMIC (E70B/VP-S)	
< CONNECTOR >			
CN001	1-573-828-11	CONNECTOR, BOARD TO BOARD 14P	
CN002	1-573-834-11	CONNECTOR, BOARD TO BOARD 20P	
CN801	1-563-590-11	CONNECTOR, FLEXIBLE 13P	
* CN802	1-564-029-00	PIN, CONNECTOR 4P	
* CN803	1-564-013-11	PIN, CONNECTOR 3P	
< DIODE >			
D801	8-719-801-78	DIODE	ISS184
D802	8-719-801-78	DIODE	ISS184
D803	8-719-801-78	DIODE	ISS184
D901	8-719-951-22	IC 1MNV10	
< DELAY LINE >			
DL003	1-415-728-21	DELAY LINE, 2H (ULTRASONIC)	
< IC >			
IC001	8-759-183-95	IC	HA118385FEB
IC003	8-759-194-24	IC	MSM7450MS-K

Ref. No.	Part No.	Description	Remark
IC201	8-759-199-28	IC	BA7025F-E2 (E70B/VP-S)
IC260	8-759-055-49	IC	AN3327K
IC702	1-809-959-21	IC	TME687 (E70B)
IC801	8-759-267-78	IC	HA118191ANT
< JUMPER RESISTOR >			
JR022	1-216-295-00	METAL CHIP	0 5% 1/10W
JR030	1-216-295-00	METAL CHIP	0 5% 1/10W
< COIL >			
L001	1-408-970-21	INDUCTOR	10uH
L002	1-408-975-21	INDUCTOR	27uH
L003	1-408-970-21	INDUCTOR	10uH
L005	1-408-972-21	INDUCTOR	15uH
L006	1-408-976-21	INDUCTOR	33uH
L007	1-408-982-11	INDUCTOR	100uH
L008	1-408-982-11	INDUCTOR	100uH
L009	1-408-980-21	INDUCTOR	68uH
L010	1-408-976-21	INDUCTOR	33uH
L011	1-408-983-21	INDUCTOR	120uH
L012	1-408-429-00	INDUCTOR	470uH
L013	1-408-427-00	INDUCTOR	330uH
L014	1-408-978-21	INDUCTOR	47uH
L015	1-408-982-11	INDUCTOR	100uH
L017	1-408-985-21	INDUCTOR	180uH
L018	1-408-982-11	INDUCTOR	100uH
L019	1-408-980-21	INDUCTOR	68uH (E70B)
L202	1-408-982-11	INDUCTOR	100uH (E70B/VP-S)
L260	1-408-982-11	INDUCTOR	100uH
L701	1-408-982-11	INDUCTOR	100uH (E70B)
L801	1-408-948-00	INDUCTOR	220uH
L802	1-408-948-00	INDUCTOR	220uH
L803	1-408-982-11	INDUCTOR	100uH
L804	1-408-982-11	INDUCTOR	100uH
L810	1-408-985-21	INDUCTOR	180uH
L812	1-408-982-11	INDUCTOR	100uH
L901	1-408-974-21	INDUCTOR	22uH
L902	1-408-948-00	INDUCTOR	220uH
L908	1-408-982-11	INDUCTOR	100uH
< TRANSISTOR >			
Q001	8-729-010-25	TRANSISTOR	MSD601-RT1
Q003	8-729-010-25	TRANSISTOR	MSD601-RT1
Q004	8-729-010-25	TRANSISTOR	MSD601-RT1
Q006	8-729-010-25	TRANSISTOR	MSD601-RT1
Q007	8-729-010-05	TRANSISTOR	MSB709-RT1
Q011	8-729-010-25	TRANSISTOR	MSD601-RT1
Q013	8-729-010-25	TRANSISTOR	MSD601-RT1

Ref. No.	Part No.	Description	Remark
Q016	8-729-424-56	TRANSISTOR	UN211L
Q021	8-729-421-19	TRANSISTOR	UN2213
Q029	8-729-421-19	TRANSISTOR	UN2213
Q030	8-729-421-19	TRANSISTOR	UN2213
Q031	8-729-424-08	TRANSISTOR	UN2111
Q032	8-729-421-19	TRANSISTOR	UN2213 (E70B/VP-S)
Q032	8-729-424-90	TRANSISTOR	UN221L-TX (E70AP/ES/IT/NC/UY/VP)
Q033	8-729-421-19	TRANSISTOR	UN2213 (E70B)
Q033	8-729-424-90	TRANSISTOR	UN221L-TX (EXCEPT E70B)
Q034	8-729-230-49	TRANSISTOR	2SC2712-YG
Q035	8-729-421-19	TRANSISTOR	UN2213 (E70B)
Q040	8-729-421-19	TRANSISTOR	UN2213
Q045	8-729-421-19	TRANSISTOR	UN2213 (E70B)
Q051	8-729-421-19	TRANSISTOR	UN2213
Q201	8-729-010-25	TRANSISTOR	MSD601-RT1 (E70B/VP-S)
Q810	8-729-421-19	TRANSISTOR	UN2213
Q811	8-729-921-12	TRANSISTOR	2SD1834
Q817	8-729-230-49	TRANSISTOR	2SC2712-YG
Q818	8-729-421-19	TRANSISTOR	UN2213
Q819	8-729-230-49	TRANSISTOR	2SC2712-YG
Q840	8-729-230-49	TRANSISTOR	2SC2712-YG
Q841	8-729-216-21	TRANSISTOR	2SA1162Y-TE85L
Q904	8-729-230-49	TRANSISTOR	2SC2712-YG
Q906	8-729-230-49	TRANSISTOR	2SC2712-YG
Q907	8-729-230-49	TRANSISTOR	2SC2712-YG
Q908	8-729-230-49	TRANSISTOR	2SC2712-YG
Q909	8-729-230-49	TRANSISTOR	2SC2712-YG
< RESISTOR >			
R001	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R002	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R003	1-216-049-00	METAL CHIP	1K 5% 1/10W
R004	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R005	1-216-071-00	METAL CHIP	8.2K 5% 1/10W
R009	1-216-049-00	METAL CHIP	1K 5% 1/10W
R010	1-216-081-00	METAL CHIP	22K 5% 1/10W
R012	1-216-081-00	METAL CHIP	22K 5% 1/10W
R014	1-216-081-00	METAL CHIP	22K 5% 1/10W
R016	1-216-049-00	METAL CHIP	1K 5% 1/10W
R018	1-216-037-00	METAL CHIP	330 5% 1/10W
R019	1-216-037-00	METAL CHIP	330 5% 1/10W
R024	1-216-035-00	METAL CHIP	270 5% 1/10W
R025	1-216-056-00	METAL GLAZE	2K 5% 1/10W
R027	1-216-071-00	METAL CHIP	8.2K 5% 1/10W
R029	1-216-049-00	METAL CHIP	1K 5% 1/10W
R030	1-216-049-00	METAL CHIP	1K 5% 1/10W
R040	1-216-121-00	METAL CHIP	1M 5% 1/10W
R041	1-216-046-00	METAL CHIP	750 5% 1/10W

Ref. No.	Part No.	Description	Remark
R042	1-216-043-00	METAL CHIP	560 5% 1/10W
R043	1-216-043-00	METAL CHIP	560 5% 1/10W
R044	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R045	1-216-058-00	METAL GLAZE	2.4K 5% 1/10W
R046	1-216-045-00	METAL CHIP	680 5% 1/10W
R047	1-216-059-00	METAL CHIP	2.7K 5% 1/10W
R048	1-216-063-00	METAL CHIP	3.9K 5% 1/10W
R049	1-216-063-00	METAL CHIP	3.9K 5% 1/10W
R050	1-216-081-00	METAL CHIP	22K 5% 1/10W (E70B/VP-S)
R051	1-216-036-00	METAL CHIP	300 5% 1/10W
R052	1-216-052-00	METAL CHIP	1.3K 5% 1/10W
R053	1-216-071-00	METAL CHIP	8.2K 5% 1/10W
R055	1-216-071-00	METAL CHIP	8.2K 5% 1/10W
R056	1-216-077-00	METAL CHIP	15K 5% 1/10W
R057	1-216-049-00	METAL CHIP	1K 5% 1/10W
R058	1-216-049-00	METAL CHIP	1K 5% 1/10W
R059	1-216-037-00	METAL CHIP	330 5% 1/10W
R060	1-216-043-00	METAL CHIP	560 5% 1/10W
R062	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R065	1-216-073-00	METAL CHIP	10K 5% 1/10W
R066	1-216-073-00	METAL CHIP	10K 5% 1/10W
R067	1-216-295-00	METAL CHIP	0 5% 1/10W
R069	1-216-047-00	METAL CHIP	820 5% 1/10W
R070	1-216-049-00	METAL CHIP	1K 5% 1/10W (E70B/VP-S)
R071	1-216-058-00	METAL GLAZE	2.4K 5% 1/10W
R072	1-216-072-00	METAL CHIP	9.1K 5% 1/10W
R075	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R077	1-216-085-00	METAL CHIP	33K 5% 1/10W
R078	1-216-081-00	METAL CHIP	22K 5% 1/10W
R079	1-216-073-00	METAL CHIP	10K 5% 1/10W
R080	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R081	1-216-073-00	METAL CHIP	10K 5% 1/10W (E70B)
R082	1-216-055-00	METAL CHIP	1.8K 5% 1/10W
R083	1-216-083-00	METAL CHIP	27K 5% 1/10W
R084	1-216-089-00	METAL CHIP	47K 5% 1/10W
R085	1-216-045-00	METAL CHIP	680 5% 1/10W
R086	1-216-066-00	METAL CHIP	5.1K 5% 1/10W
R088	1-216-059-00	METAL CHIP	2.7K 5% 1/10W
R091	1-216-041-00	METAL CHIP	470 5% 1/10W (E70B)
R091	1-216-295-00	METAL CHIP	0 5% 1/10W (EXCEPT E70B)
R094	1-216-073-00	METAL CHIP	10K 5% 1/10W
R099	1-216-059-00	METAL CHIP	2.7K 5% 1/10W
R102	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R113	1-216-295-00	METAL CHIP	0 5% 1/10W

Ref. No.	Part No.	Description	Remark
R119	1-216-066-00	METAL CHIP	5.1K 5% 1/10W
R204	1-216-049-00	METAL CHIP	1K 5% 1/10W (E70B/VP-S)
R205	1-216-073-00	METAL CHIP	10K 5% 1/10W (E70B/VP-S)
R206	1-216-065-00	METAL CHIP	4.7K 5% 1/10W (E70B/VP-S)
R207	1-216-109-00	METAL CHIP	330K 5% 1/10W (E70B/VP-S)
R208	1-216-057-00	METAL CHIP	2.2K 5% 1/10W (E70B/VP-S)
R262	1-216-035-00	METAL CHIP	270 5% 1/10W
R263	1-216-067-00	METAL CHIP	5.6K 5% 1/10W
R265	1-216-033-00	METAL CHIP	220 5% 1/10W
R266	1-216-051-00	METAL CHIP	1.2K 5% 1/10W
R267	1-216-035-00	METAL CHIP	270 5% 1/10W
R268	1-216-097-00	METAL CHIP	100K 5% 1/10W
R269	1-216-081-00	METAL CHIP	22K 5% 1/10W (E70B/VP-S)
R270	1-216-081-00	METAL CHIP	22K 5% 1/10W (E70B/VP-S)
R271	1-216-079-00	METAL CHIP	18K 5% 1/10W
R276	1-216-073-00	METAL CHIP	10K 5% 1/10W
R801	1-216-025-00	METAL CHIP	100 5% 1/10W
R802	1-216-037-00	METAL CHIP	330 5% 1/10W
R805	1-211-959-11	METAL GLAZE	20 0.50% 1/10W
R806	1-216-025-00	METAL CHIP	100 5% 1/10W
R807	1-216-025-00	METAL CHIP	100 5% 1/10W
R811	1-216-037-00	METAL CHIP	330 5% 1/10W (E70AP/B/1T/VP/VP-S)
R812	1-216-025-00	METAL CHIP	100 5% 1/10W
R815	1-216-081-00	METAL CHIP	22K 5% 1/10W
R816	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R817	1-216-049-00	METAL CHIP	1K 5% 1/10W
R835	1-216-051-00	METAL CHIP	1.2K 5% 1/10W
R836	1-216-056-00	METAL GLAZE	2K 5% 1/10W
R838	1-216-075-00	METAL CHIP	12K 5% 1/10W
R842	1-208-753-11	METAL GLAZE	62 0.50% 1/10W
R843	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R844	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R846	1-216-059-00	METAL CHIP	2.7K 5% 1/10W
R847	1-216-078-00	METAL GLAZE	16K 5% 1/10W
R856	1-216-033-00	METAL CHIP	220 5% 1/10W
R857	1-216-033-00	METAL CHIP	220 5% 1/10W
R858	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R859	1-216-089-00	METAL CHIP	47K 5% 1/10W
R861	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
R862	1-216-061-00	METAL CHIP	3.3K 5% 1/10W
R863	1-216-047-00	METAL CHIP	820 5% 1/10W

Ref. No.	Part No.	Description	Remark
R901	1-216-039-00	METAL CHIP	390 5% 1/10W
R902	1-216-033-00	METAL CHIP	220 5% 1/10W
R903	1-216-065-00	METAL CHIP	4.7K 5% 1/10W
R904	1-216-295-00	METAL CHIP	0 5% 1/10W
R906	1-216-077-00	METAL CHIP	15K 5% 1/10W
R907	1-216-075-00	METAL CHIP	12K 5% 1/10W
R908	1-216-033-00	METAL CHIP	220 5% 1/10W
R910	1-216-025-00	METAL CHIP	100 5% 1/10W
R913	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R914	1-216-077-00	METAL CHIP	15K 5% 1/10W
R915	1-216-075-00	METAL CHIP	12K 5% 1/10W
R916	1-216-039-00	METAL CHIP	390 5% 1/10W
R917	1-216-045-00	METAL CHIP	680 5% 1/10W
R918	1-216-043-00	METAL CHIP	560 5% 1/10W
R919	1-216-039-00	METAL CHIP	390 5% 1/10W
R920	1-216-043-00	METAL CHIP	560 5% 1/10W
R921	1-216-049-00	METAL CHIP	1K 5% 1/10W
R922	1-216-041-00	METAL CHIP	470 5% 1/10W
R924	1-216-031-00	METAL CHIP	180 5% 1/10W
R925	1-216-045-00	METAL CHIP	680 5% 1/10W
R926	1-216-025-00	METAL CHIP	100 5% 1/10W
R927	1-216-067-00	METAL CHIP	5.6K 5% 1/10W
R928	1-216-071-00	METAL CHIP	8.2K 5% 1/10W
R929	1-216-043-00	METAL CHIP	560 5% 1/10W
R966	1-216-295-00	METAL CHIP	0 5% 1/10W
< VARIABLE RESISTOR >			
RV001	1-238-856-11	RES, ADJ, CERMET 10K	
RV003	1-238-856-11	RES, ADJ, CERMET 10K	
RV004	1-238-856-11	RES, ADJ, CERMET 10K	
RV005	1-238-856-11	RES, ADJ, CERMET 10K	
RV006	1-238-857-11	RES, ADJ, CERMET 22K	
RV009	1-238-854-11	RES, ADJ, CERMET 2.2K	
RV201	1-238-852-11	RES, ADJ, CERMET 470 (E70B/VP-S)	
< TRANSFORMER >			
T001	1-403-617-11	COIL, TANK	
T201	1-409-467-11	COIL (TRAP 7.8K) (E70B/VP-S)	
< VIBRATOR >			
X001	1-760-118-21	VIBRATOR, CRYSTAL (4.43MHz)	

Ref. No.	Part No.	Description	Remark
*	A-6754-656-A	TU-146 BOARD, COMPLETE (E70UY)	*****
*	A-6754-657-A	TU-146 BOARD, COMPLETE (E70ES/NC)	***** (Ref. No. 7, 000Series)
< CAPACITOR >			
C002	1-126-233-11	ELECT	22uF 20% 50V (E70ES/NC/UY)
C003	1-124-126-00	ELECT	47uF 20% 10V (E70ES/NC/UY)
C004	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C006	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C007	1-126-101-11	ELECT	100uF 20% 16V (E70ES/NC/UY)
C009	1-164-161-11	CERAMIC CHIP	0.0022uF 10% 100V (E70ES/NC/UY)
C010	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C011	1-124-126-00	ELECT	47uF 20% 10V (E70ES/NC/UY)
C012	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C013	1-124-927-11	ELECT	4.7uF 20% 100V (E70ES/NC/UY)
C014	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V (E70ES/NC/UY)
C017	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C018	1-124-126-00	ELECT	47uF 20% 10V (E70ES/NC/UY)
C019	1-126-101-11	ELECT	100uF 20% 16V (E70ES/NC/UY)
C020	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C022	1-124-907-11	ELECT	10uF 20% 50V (E70ES/NC/UY)
C023	1-163-031-11	CERAMIC CHIP	0.01uF 50V (E70ES/NC/UY)
C024	1-130-483-00	MYLAR	0.01uF 5% 50V (E70ES/NC/UY)
C025	1-126-101-11	ELECT	100uF 20% 16V (E70ES/NC/UY)
C026	1-124-907-11	ELECT	10uF 20% 50V (E70ES/NC/UY)
C027	1-124-907-11	ELECT	10uF 20% 50V (E70ES/NC/UY)

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Ref. No.	Part No.	Description	Remark
C028	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C029	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C030	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C031	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C036	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C037	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C038	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
C039	1-124-907-11	ELECT 10uF	20% 50V (E70ES/NC/UY)
< CONNECTOR >			
CN001	1-568-787-11	PIN, CONNECTOR 10P	(E70ES/NC/UY)
CN002	1-568-788-21	PIN, CONNECTOR 11P	(E70ES/NC/UY)
< DIODE >			
D001	8-719-800-76	DIODE 1SS226	(E70ES/NC/UY)
D004	8-719-978-94	DIODE DTZ30C	(E70ES/NC/UY)
D051	8-719-800-76	DIODE 1SS226	(E70ES/NC/UY)
< IC >			
IC001	8-759-512-95	IC TDA8415	(E70ES/NC)
IC002	8-759-996-43	IC RC4558PS-T1	(E70ES/NC/UY)
< JUMPER RESISTOR >			
JR010	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC)
JR011	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR012	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR013	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR014	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR015	1-216-296-00	METAL CHIP 0 5%	1/8W (E70UY)
JR016	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR017	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR018	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR019	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)

Ref. No.	Part No.	Description	Remark
JR020	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC/UY)
JR021	1-216-296-00	METAL CHIP 0 5%	1/8W (E70UY)
JR022	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC)
JR023	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC)
JR025	1-216-296-00	METAL CHIP 0 5%	1/8W (E70UY)
JR026	1-216-296-00	METAL CHIP 0 5%	1/8W (E70ES/NC)
< COIL >			
L001	1-414-183-41	INDUCTOR 10uH	(E70ES/NC/UY)
L002	1-414-189-31	INDUCTOR 100uH	(E70ES/NC/UY)
L003	1-414-183-41	INDUCTOR 10uH	(E70ES/NC/UY)
L005	1-414-183-41	INDUCTOR 10uH	(E70ES/NC/UY)
L006	1-414-183-41	INDUCTOR 10uH	(E70ES/NC/UY)
L007	1-414-183-41	INDUCTOR 10uH	(E70ES/NC/UY)
< DECODER BLOCK >			
△NCM01	1-466-902-11	DECODER BLOCK, ONTA (NCA-395A)	(E70UY)
△NCM01	1-466-903-11	DECODER BLOCK (NCA-389A)	(E70ES/NC)
< TRANSISTOR >			
Q001	8-729-422-27	TRANSISTOR 2SD601A-Q	(E70ES/NC/UY)
Q002	8-729-422-27	TRANSISTOR 2SD601A-Q	(E70ES/NC/UY)
Q003	8-729-173-38	TRANSISTOR 2SA733-K	(E70ES/NC/UY)
Q005	8-729-422-27	TRANSISTOR 2SD601A-Q	(E70ES/NC/UY)
Q051	8-729-303-37	TRANSISTOR 2SD655-E	(E70ES/NC/UY)
< RESISTOR >			
R001	1-216-033-00	METAL CHIP 220 5%	1/10W (E70ES/NC/UY)
R002	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70ES/NC/UY)
R003	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70ES/NC/UY)
R004	1-216-075-00	METAL CHIP 12K 5%	1/10W (E70ES/NC/UY)
R005	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70ES/NC/UY)
R006	1-216-071-00	METAL CHIP 8.2K 5%	1/10W (E70ES/NC/UY)
R007	1-216-089-00	METAL CHIP 47K 5%	1/10W (E70ES/NC/UY)
R008	1-216-025-00	METAL CHIP 100 5%	1/10W (E70ES/NC/UY)
R010	1-216-295-00	METAL CHIP 0 5%	1/10W (E70ES/NC/UY)
R011	1-216-025-00	METAL CHIP 100 5%	1/10W (E70ES/NC/UY)

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

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Ref. No.	Part No.	Description	Remark
R012	1-216-037-00	METAL CHIP 330 5%	1/10W (E70ES/NC/UY)
R013	1-216-037-00	METAL CHIP 330 5%	1/10W (E70ES/NC/UY)
R014	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70ES/NC)
R015	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70ES/NC)
R016	1-216-055-00	METAL CHIP 1.8K 5%	1/10W (E70ES/NC)
R021	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70UY)
R022	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70UY)
R024	1-216-041-00	METAL CHIP 470 5%	1/10W (E70ES/NC/UY)
R025	1-216-041-00	METAL CHIP 470 5%	1/10W (E70ES/NC/UY)
R027	1-216-049-00	METAL CHIP 1K 5%	1/10W (E70ES/NC/UY)
R028	1-216-045-00	METAL CHIP 680 5%	1/10W (E70ES/NC/UY)
R030	1-216-295-00	METAL CHIP 0 5%	1/10W (E70ES/NC/UY)
R031	1-216-295-00	METAL CHIP 0 5%	1/10W (E70ES/NC)
R033	1-216-081-00	METAL CHIP 22K 5%	1/10W (E70ES/NC/UY)
R034	1-216-085-00	METAL CHIP 33K 5%	1/10W (E70ES/NC/UY)
R035	1-216-081-00	METAL CHIP 22K 5%	1/10W (E70ES/NC/UY)
R036	1-216-085-00	METAL CHIP 33K 5%	1/10W (E70ES/NC/UY)
R037	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (E70ES/NC)
R038	1-216-071-00	METAL CHIP 8.2K 5%	1/10W (E70ES/NC)
R039	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (E70ES/NC)
R040	1-216-220-00	METAL GLAZE 8.2K 5%	1/8W (E70ES/NC)
R041	1-216-097-00	METAL CHIP 100K 5%	1/10W (E70ES/NC/UY)
R042	1-216-097-00	METAL CHIP 100K 5%	1/10W (E70ES/NC/UY)
R043	1-216-097-00	METAL CHIP 100K 5%	1/10W (E70ES/NC/UY)
R044	1-216-097-00	METAL CHIP 100K 5%	1/10W (E70ES/NC/UY)
R045	1-216-295-00	METAL CHIP 0 5%	1/10W (E70ES/NC/UY)
R046	1-216-295-00	METAL CHIP 0 5%	1/10W (E70ES/NC/UY)
R051	1-216-113-00	METAL CHIP 470K 5%	1/10W (E70ES/NC/UY)
R052	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (E70ES/NC/UY)
R053	1-216-198-91	METAL GLAZE 1K 5%	1/8W (E70ES/NC/UY)
< VARIABLE RESISTOR >			
RV001	1-241-763-11	RES, ADJ, CARBON 4.7K	(E70ES/NC)
< TUNER >			
△TU001	1-693-206-11	TUNER (BTF-3U601)	(E70UY)
△TU001	1-693-207-11	TUNER (BTF-3C401)	(E70ES/NC)
< VIBRATOR >			
X001	1-567-925-11	VIBRATOR, CRYSTAL	(E70ES/NC)

* A-6781-281-A VP-39 BOARD, COMPLETE (E70VP/VP-S)			

(Ref. No. 9, 000Series)			
< CAPACITOR >			
C201	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
C202	1-163-075-00	CERAMIC CHIP 0.047uF	50V
C204	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
C206	1-163-989-11	CERAMIC CHIP 0.033uF	10% 25V
C210	1-163-121-00	CERAMIC CHIP 150PF	5% 50V
< CONNECTOR >			
CN201	1-573-824-11	CONNECTOR, BOARD TO BOARD	10P
< DIODE >			
D201	8-719-911-19	DIODE 1SS119	
< IC >			
IC201	8-759-030-60	IC SDA5642	
IC202	8-759-147-30	IC uPD75004GB-VSX182	
< JUMPER RESISTOR >			
JR201	1-216-296-00	METAL CHIP 0 5%	1/8W
< COIL >			
L241	1-410-509-11	INDUCTOR 10uH	
< RESISTOR >			
R201	1-216-073-00	METAL CHIP 10K 5%	1/10W
R202	1-216-073-00	METAL CHIP 10K 5%	1/10W
R203	1-216-097-00	METAL CHIP 100K 5%	1/10W
R204	1-216-119-00	METAL CHIP 820K 5%	1/10W
R205	1-216-025-00	METAL CHIP 100 5%	1/10W

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

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Ref. No.	Part No.	Description	Remark
R206	1-216-119-00	METAL CHIP 820K 5% 1/10W	
R207	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	
R208	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R210	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R211	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R212	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R213	1-216-073-00	METAL CHIP 10K 5% 1/10W	
< VIBRATOR >			
X201	1-577-101-11	VIBRATOR, CERAMIC (4.19MHz)	

MISCELLANEOUS			

1	1-467-386-61	SWITCH BLOCK, CONTROL (E70AP)	
1	1-467-386-71	SWITCH BLOCK, CONTROL (E70VP)	
1	1-467-386-81	SWITCH BLOCK, CONTROL (E70ES/IT/NC/UY)	
1	1-467-386-91	SWITCH BLOCK, CONTROL (E70B)	
65	1-555-110-00	CABLE, PIN (E70ES/NC/UY)	
65	1-558-924-21	CABLE, PIN (E70AP/B/IT/VP/VP-S)	
67	1-650-282-11	FP-72 FLEXIBLE BOARD	
68	1-695-486-11	CONNECTOR, BOARD TO BOARD 10P	
260	1-543-647-11	HEAD, FE	
267	A-6761-129-A	HEAD BLOCK ASSY, ACE	
282	1-550-872-11	DRUM ASSY, ROTARY UPPER (DZR-60-R)	
M901	1-550-873-11	LOWER DRUM ASSY (DZL-60A-R)	
M902	8-835-489-01	MOTOR, DC U-26K	
M903	X-3733-302-1	MOTOR ASSY, CAM	
M904	X-3727-784-1	MOTOR ASSY	
S1	1-692-062-11	SWITCH, ROTARY (CAM ENCODER)	

ACCESSORIES & PACKING MATERIALS			

△	1-574-056-11	CORD, POWER (E70VP/VP-S)	
△	1-575-131-11	CORD, POWER (E70AP/B/ES/IT/NC)	
△	1-590-865-11	CORD, POWER (E70UY)	
	1-696-593-11	CORD, CONNECTION (PAL) (EXCEPT E70B)	
	1-696-905-11	CORD, CONNECTION (E70B)	
	3-695-308-01	DRIVER, VOLUME	
*	3-701-634-00	BAG, POLYETHYLENE	
	3-758-276-11	MANUAL, INSTRUCTION (ENGLISH) (E70UY)	
	3-758-276-41	MANUAL, INSTRUCTION (DUTCH) (E70AP/NC)	
	3-758-276-51	MANUAL, INSTRUCTION (FRENCH) (E70B)	
	3-758-276-61	MANUAL, INSTRUCTION (SPANISH) (E70ES)	
	3-758-276-71	MANUAL, INSTRUCTION (FRENCH, GERMAN) (E70NC/VP/VP-S)	

Ref. No.	Part No.	Description	Remark
	3-758-276-81	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE, DANISH) (E70NC)	
	3-758-276-91	MANUAL, INSTRUCTION (ITALIAN) (E70IT/VP/VP-S)	
*	3-957-486-01	CUSHION (UPPER)	
*	3-957-487-01	CUSHION (LOWER)	
*	3-957-492-61	INDIVIDUAL CARTON (E70AP/ES/IT/NC/VP/VP:MESECAM)	
*	3-957-492-71	INDIVIDUAL CARTON (E70B)	
*	3-957-492-81	INDIVIDUAL CARTON (E70UY)	

HARDWARE LIST			

#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2	
#2	7-685-782-01	SCREW +PTT 2X5 (S)	
#3	7-624-106-04	STOP RING 3.0, TYPE -E	
#4	7-682-645-01	SCREW +PS 3X4	
#5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3	
#6	7-682-548-04	SCREW +P 3X8	
#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#8	7-621-732-08	SET-SCT, HEX. 2X3 FLAT POINT	
#10	7-628-254-05	SCREW +PS 2.6X5	
#11	7-624-102-04	STOP RING 1.5, TYPE -E	
#13	7-682-546-04	SCREW +P 3X5	
#14	7-685-646-81	SCREW +BVTP 3X8 TYPE2	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

6-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD- ING	TAPE UNTHREAD- ING	PB	PB- PAUSE	SLOW	×2	CUE	REVIEW	REC	REC- PAUSE
V·PB	MA-181 IC203 ⑤	O	H	H	H	L	L	L	L	L	L	H	H
HEAD CONT	MA-181 IC203 ⑤	O	L	L	L	L	HI-Z (2.5 V)	*1	*10	*5	*5	L	L
RF SW P (SW30)	MA-181 IC203 ①	O	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
Q VD/V MUTE	MA-181 IC203 ②	O	L	L	L	*3	*4	*4	*4	*4	*4	L	L
SP	MA-181 IC203 ⑥	O	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6
ENV GAIN	MA-181 IC203 ②	O	*11	*11	*11	*7	*7	*7	*7	*7	*7	*11	*11
REC·P	MA-181 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	L	H
REC	MA-181 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	H	H
V SYNC	MA-181 IC203 ⑤	I	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
OSD MUTE	MA-181 IC203 ⑦	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
E TAPE	MA-181 IC203 ④	O	L	L	L	*12	*12	*12	*12	*12	*12	L	L
NTSC	MA-181 IC203 ⑦	O	H	H	H	H	H	H	H	H	H	H	H
3.58NTSC	MA-181 IC203 ⑤	O	H	H	H	H	H	H	H	H	H	H	H
JOG	MA-181 IC203 ⑦	O	L	L	L	L	H	H	H	H	H	L	L
ORC SETTEI	MA-181 IC203 ⑤	O	L	L	L	L	L	L	L	L	L	*13	*13

*1. Forward slow mode: "HI-Z (2.5 V)" in tape stop, "L" in tape running (approx. 40 msec.).
Forward slow mode: "HI-Z (2.5 V)" in tape stop, "H" in tape running SP mode (approx. 40 msec.).
"L" in tape running EP mode (approx. 40 msec.).

*2. Synchronized with drum rotation. 25 Hz 50% duty pulse.

*3. Normally "L". "H" when CTL signal is not generated.

*4. V period "H" pulse.

*5. "H" in SP mode. "L" in LP/EP mode.

*6. Selected by REC mode. SP mode: "L".

*7. Selected by tape recording mode.

Model	SP	LP	EP
Signal			
SP ⑥	L	H	H
ENV GAIN ②	L	L	H

*8. Composite Sync signal (positive).

*9. "H" when menu screen or blue back screen.

*10. "HI-Z (2.5 V)" in LP/EP mode. "H" in SP mode.

*11. Selected by REC mode: "H" EP mode.

*12. "L" when APC is off. "H" when APC is ON and "HG tape" is used.

*13. "H" during APC measurement.

SECTION 6 INTERFACE, IC PIN FUNCTION DESCRIPTION

SLV-E70AP/B/ES/IT/NC/UY/VP

6-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD- ING	TAPE UNTHREAD- ING	PB	PB- PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC- PAUSE	PB INDEX WRT/ERS
REC CTL	MA-181 IC203 ⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
CAP STOP	MA-181 IC203 ⑨	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	
STEP PLS	MA-181 IC203 ⑫	O	L	L	L	L	L	L	L	*2	L	L	L	L	L	
CTL REC	MA-181 IC203 ⑬	O	L	L	L	L	L	L	L	L	L	L	L	H	H	H
INDEX	MA-181 IC203 ⑭	O	L	L	L	L	L	L	L	L	L	L	L	L	L	H
PB CTL	MA-181 IC203 ⑮	I	H/L	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H/L	
VD CTL	MA-181 IC203 ⑯	I	H/L	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H/L	
DRUM PG	MA-181 IC203 ⑰	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7	
DRUM FG	MA-181 IC203 ⑱	I	H/L	*8	*8	*5	*5	*8	*8	*8	*8	*8	*8	*8	*8	
CAP FG	MA-181 IC203 ⑲	I	H/L	*6	*6	*5	*5	*6	H/L	*9	*6	*6	*6	*6	H/L	
CAP DA	MA-181 IC203 ⑳	O	*10	*10	*10	*10	*10	*11	*10	*10	*11	*11	*11	*11	*10	
DRUM DA	MA-181 IC203 ㉑	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	
CTL STEP	MA-181 IC203 ㉒	O	L	L	L	L	L	L	L	*13	L	L	L	L	L	

*1. 30 Hz or 25 Hz pulse.

*2. Pulse at tape running.

*3. Reverse logic pulse of STEP PLS.

*4. "L" when drum rotation stop.

*5. Unstable period pulse.

*6. Pulse of period in proportion to tape speed.

*7. 30 Hz or 25 Hz pulse.

*8. 360 Hz or 300 Hz or 180/150 Hz pulse.

*9. Pulse at tape running.

*10. Approx. 2 msec period "H" or "L" pulse.

*11. Approx. 1.5 msec period "H" or "L" pulse.

*12. Approx. 3 msec period "H" or "L" pulse.

*13. "H" when FWD direction STEP drive.

6-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE

Signal	Pin No.	I/O	HI-SPEED REW	EJECTED	CASSETTE LOADING	CASSETTE UNLOAD- ING	TAPE THREAD- ING	TAPE UNTHREAD- ING	STOP	FF	REW	PB	PB- PAUSE	SLOW	x2	CUE	REVIEW	REC	REC- PAUSE
CAM *1	MA-181 IC203 ⑫	O	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L
LOAD	MA-181 IC203 ⑬	O	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CW/CCW	MA-181 IC203 ⑭	O			H	L	H	L											
MODE 1	MA-181 IC203 ⑮	I	H	L	L	L	H	H	L	H	H	H	L	L	H	H	H	H	L
MODE 2	MA-181 IC203 ⑯	I	L	H	H	H	H	H	L	L	L	L	H	H	L	L	L	L	H
MODE 3	MA-181 IC203 ⑰	I	H	H	H	H	L	L	L	L	L	H	H	H	H	H	L	H	H
MODE 4	MA-181 IC203 ⑱	I	H	H	H	H	H	H	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-181 IC203 ⑲	I	*2	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
C-UP/DOWN	MA-181 IC203 ⑳	I	L	H	H→L	L→H	L	L	L	L	L	L	L	L	L	L	L	L	L
TREEL FG	MA-181 IC203 ㉑	I	*3	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
SREEL FG	MA-181 IC203 ㉒	I	*3	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END LED	MA-181 IC203 ㉓	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP TRQ 1	MA-181 IC203 ㉔	O (O.D)	*1							*1	*1			*6		*1	*1		
CAP TRQ 2	MA-181 IC203 ㉕	O (O.D)								*1	*1								
CAP RVS	MA-181 IC203 ㉖	O	H	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
T SENS	MA-181 IC203 ㉗	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
S SENS	MA-181 IC203 ㉘	I	*7	*4	*4	*4	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7

*1. "L" when mechanism mode transition.

*2. "L" when erasing protection tab is bent, "H" when not bent.

*3. Pause of period in proportion to reel rotating speed.

*4. Approx. 2 msec period "H" pulse.

*5. Pulse at tape running.

*6. "L" when tape running and CAP RVS is "H".

*7. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

6-4. SYSTEM CONTROL – SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE

Signal	Pin No.	I/O	I/O level
COSMO-RESET	MA-181 IC203 ④	I	Normally "H". "L" when service interruption is detected or restored.
COSMO-CS	MA-181 IC203 ④	I	Chip select signal from timer microprocessor. V period "L" pulse.
SI-BUS	MA-181 IC203 ④	I	Serial communication data from timer microprocessor. V period "L" pulse.
SO-BUS	MA-181 IC203 ④	O	Serial communication data to timer microprocessor. V period "L" pulse.
S CLK	MA-181 IC203 ④	I	Serial communication clock with timer microprocessor. V period "L" pulse.

6-5. SYSTEM CONTROL – AUDIO BLOCK INTERFACE

Signal	Pin No.	I/O	STOP/FF/REW	TAPE LOADING	TAPE UNLOADING	PB	PB-PAUSE	SLOW	x2	CUE	REVIEW	REC	REC-PAUSE
AF ENVELOP	MA-181 IC203 ①	I	AF RF envelope signal input terminal for automatic tracking.										
NA PB	MA-181 IC203 ①	O	L	L	L	H	H	H	H	H	H	L	L
A MUTE	MA-181 IC203 ⑦	O (O.D)	L	L	L	*4	H	H	H	H	H	L	L
SP	MA-181 IC203 ⑤	O	*2	*2	*2	*3	*3	*3	*3	*3	*3	*2	*2
NA REC-P	MA-181 IC203 ⑩	O	L	L	L	L	L	L	L	L	L	H	L
AF REC-P	MA-181 IC203 ④	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	MA-181 IC203 ⑩	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
AF SW POSITION	MA-181 IC203 ⑤	I	Input terminal for AF switching position adjustment.										
FULL ERS	MA-181 IC203 ⑤	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50% duty pulse approx. 5 msec delayed from RF SW P.

*2. Selected by REC mode selector. SP mode: "L".

*3. Selected by tape recording mode. SP mode: "L".

*4. Normally "L". "H" when there is not CTL pulse.

6-6. SYSTEM CONTROL AND RF MODULATOR – INPUT SELECTION BLOCK INTERFACE

Signal	Pin No.	I/O	I/O level
LINE 1	MA-181 IC203 ③	O	*1. Input select control signal.
LINE 2	MA-181 IC203 ②	O	

*1.

Input Signal	Tuner	LINE 1	LINE 2
LINE 1 ③	L	H	L
LINE 2 ②	L	L	H

6-7. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTION (MA-181 BOARD IC203 CXP80732-011Q)

Pin No.	Pin Name	I/O	Function
1	RF SWP	O	Video switching pulse output
2	Q VD	O	Quasi VD pulse output
3	Q HD ENBL	O	Quasi HD voltage level control
4	AF REC P	O	"H" output when hi-fi audio REC
5	RECP	O	"H" output when video REC-PAUSE
6	FE ON	O	Playing erase ON/OFF (SLV-920HF)
7	REC CTL	O	REC CTL output
8	INT VD	O	Internal VD signal. Not used
9		O	Not used
10		O	Not used
11	NA PB	O	"H" when normal audio playback
12	CAM	O	CAM motor select
13	CW	O	Clockwise/counterclockwise signal output
14	LOAD	O	Loading motor select
15	CIN/REC PRF	I	Erasing protection tab, cassette IN detection input
16	C DOWN	I	Cassette up/down detection input
17	T SENS	I	Tape up end sensor input
18	S SENS	I	Supply end sensor input
19	MOD CONT	O	RF modulator ON/OFF control
20	AV CONT	O	Euro connector pin ① control
21	MESECAM	I	ME SECAM input
22	SECAM	I	SECAM input
23	VPB	O	VPB reverse
24	STEP PLS	O	"H" when capstan step drive
25	3.58/4.43 NTSC	O	"L"
26	3.58 NTSC	O	"H"
27	NTSC	O	"H"
28	E-TAPE	O	"H" when HG tape using
29	BS BILING	O	"H" when BS bilingual. Not used
30	C+CONT	O	CANAL + control.
31		O	Not used
32	END LED	O	END sensor LED drive output
33	CAP TPQ2	O	Capstan current control. "L" when FF/REW → stop
34	CAP TPQ1	O	Capstan current control. "L" when slow down
35	PAL	O	"H"
36	FULL ERS	O	"L" when full erase head operation
37	A MUTE	O	Audio MUTE output
38	CAP STOP	O	Capstan STOP signal output
39	MP	I	Fixed at "L" level
40	COSMO RST	I	System reset input
41			GND
42	XTAL		System clock 12 MHz
43	EXTAL		
44	COSMO CS	I	Chip select signal
45	SIO	I	Signal for serial communication
46	S00	O	
47	SCLK	I	
48	L METER	O	Not used
49	R METER	O	Not used

Pin No.	Pin Name	I/O	Function
50	NTPB SW	I	Not used
51	AF SW POSI	I	VR input for hi-fi switching pulse position adjustment
52	AVss		GND
53	AVref		AD port reference input. UNSW 5 V
54	AVcc		UNSW 5 V
55	MODE4	I	Mechanism section CAM encoder input
56	MODE3	I	
57	MODE2	I	
58	MODE1	I	
59	DEW	I	DEW sensor input. Not used
60	RF ENV	I	Video RF envelope input
61	AF ENV	I	hi-fi audio RF envelope input
62	RF SW POSI	I	VR input for RF switching position adjustment
63	SREEL FG	I	S reel sensor input
64	TREEL FG	I	T reel sensor input
65	NT JUDGE	I	Not used
66	V SYNC	I	Composite sync input
67	PB CTL	I	Playback CTL input
68	DRM PG	I	Drum PG input
69	DRM FG	I	Drum FG input
70	CAP FG	I	Capstan FG input
71	OSD MUTE	O	"H" when blue back
72		O	Not used
73	CAP D/A	O	Capstan error D/A output
74	DRM D/A	O	Drum error D/A output
75	EP	O	"L" when EP mode REC
76	ORC SETTEI	O	"H" when ORC measurement
77	VD CTL	I	Playback CTL input
78	AMS IN	I	Not used
79	LINE1	O	Video/audio input select signal
80	1	O	Expansion port for serial communication
81	SCK1	O	
82	LINE2	O	Video/audio input select signal
83	NA REC P	I/O	"H" when recording normal audio
84	CAP RVS	I/O	Capstan reverse signal output
85	HEAD CONT	I/O	Head select control
86		I	Not used
87		O	Not used
88			GND
89			UNSW 5 V
90			Connected to UNSW 5 V
91	SP	O	"L" when SP mode
92	ENV GAIN	O	RF envelope gain control
93	CTL STEP	O	CTL amp step control
94	CTL REC	O	CTL amp recording inhibition
95	VPB	O	"L" when video playback
96	CTL INDEX	O	CTL amp index control
97	JOG	O	"H" when trick play mode
98	REC	O	Rise up signal of head amp recording power
99	LP HEAD	O	(PAL) Head select control
100	AF SWP	O	hi-fi switching pulse output

6-8. TIMER, TUNER, MODE CONTROL MICROPROCESSOR PIN FUNCTION (PT-96 BOARD IC401 MB89095-159/MB89096-130)

Pin No.	Pin Name	I/O	Function
1	CL1		Connected to oscillator for clock
2	CL0		Connected to oscillator for clock
3	MOD0		
4	MOD1		
5	X0		Connected to main oscillator
6	X1		Connected to main oscillator
7	Vss		
8	RESET	I	Reset signal in
9	FF	O	FF LED
10	REW	O	REW LED
11	H-S-REW	O	HI-SPEED REW LED
12	B. LIGHT CONT	O	LCD back light ON/OFF control signal
13			Not used
14	LCD CS	O	LCD driver chip select signal
15	COSMO RESET	O	System controller reset signal
16	CC CS	O	Character generator chip select signal
17	POWER FAIL	I	Power failure detect signal in
18	V SYNC	I	V sync. signal in
19	POWER CONT	O	Power ON/OFF control signal
20	COSMO CS	O	System controller chip select signal
21	H DET	I	Video signal detect signal in
22	C+DET	I	CANAL + det. signal in
23	SCL	I/O	I ² C bus clock
24	SDA	I/O	I ² C bus data
25	PAUSE	O	PAUSE LED
26	TIMER	O	TIMER RED
27	REC	O	REC RED
28	CMOD		
29	TA MUTE	O	Tuner audio mute control signal
30	C+CLK	O	Clock for CANAL + control
31	C+DATA	O	Data for CANAL + control
32	SIRCS IN	I	SIRCS signal in
33	PLL CLOCK	O	Tuner clock signal
34	PLL DATA	O	Tuner data signal
35	PLL ENABLE	O	Tuner enable signal
36	PDC DET	I	PDC det. in
37	VPS/PDC RST (AP, UX, UY, VP) SYS1 (B)	O	VPS, PDC microcomputer reset Tuner system select 1
38	VPS/PDC CS (AP, UX, UY, VP) SYS2 (B)	O	VPS, PDC microcomputer chip select Tuner system select 2
39 - 52	N. C.		
53	V1dp		
54 - 57	N. C.		
58	Vss		
59 - 66	N. C.		
67	Vcc		

Pin No.	Pin Name	I/O	Function
68 - 74	N. C.		
75	EDS CS	O	EDS microcomputer chip select
76	POWER CONT 2	O	Power supply control signal for EDS
77	SO BUS	I	Serial data input
78	SI BUS	O	Serial data output
79	S CLK	O	Clock for serial communication
80	MEM CS	O	E ² PROM chip select signal
81	MEM CLK	O	E ² PROM clock
82	MEM DATA	O	E ² PROM data
83	AVss		
84	AFT	I	Tuner AFT input
85			Not used
86	A/D2	I	Key reading A/D input
87	A/D3	I	Key reading A/D input
88	A/D4	I	Key reading A/D input
89	A/D5	I	Key reading A/D input
90	A/D6	I	Key reading A/D input
91	A/D7	I	Key reading A/D input
92	AVcc		
93	FWD	O	Forward playback LED
94	DEST 1	I	Destination discriminating A/D input
95	DEST 2	I	Destination discriminating A/D input
96	RVS	O	Reverse playback LED
97	-		
98	B. L. LED	O	LCD back light LED control output
99	BUZZER	O	Buzzer out
100	Vcc		

SECTION 7

ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for adjustments on Page 7-7.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT II.

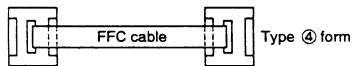
7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

- 1) Color TV
- 2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
- 3) Frequency counter (min. 8 digits)
- 4) PAL, SECAM pattern generators
- 5) Digital voltmeter
- 6) Audio level meter
- 7) Audio generator
- 8) Attenuator
- 9) Alignment tape
Part Code: H7099052H (MH-2)
- 10) Extension cables (See page 7-2 for using location)



- ① CG-20 (CN401) ↔ PT-96 (CN405)
(13 pins J-6090-045-A)
- ② HF-34 (CN101) ↔ MA-181 (CN406)
(11 pins J-6090-047-A)
- ③ HF-34 (CN102) ↔ MA-181 (CN405)
(11 pins J-6090-047-A)
- ④ RV-33 (CN001) ↔ MA-181 (CN303)
(14 pins J-6090-044-A)
- ⑤ RV-33 (CN002) ↔ MA-181 (CN304)
(20 pins J-6090-043-A)

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

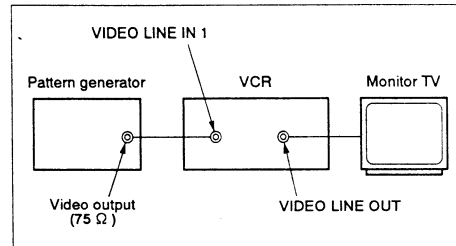


Fig. 7-2-1.

2-1-3. Set-up Adjustment

In this adjustment, PAL pattern generator is connected with LINE 1 input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30 : 0.66. Fig. 7-2 shows video signals (color bars) used in adjusting the video section.

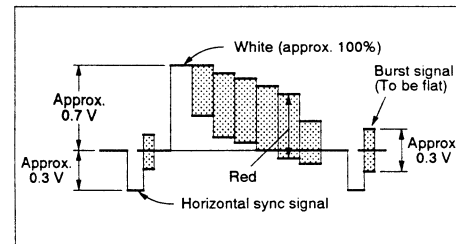


Fig. 7-2-2.

2-1-4. Alignment Tape (MH-2)

	Time	Video signal	Audio signal
1	10 minutes	Stair-step	6 kHz
2	5 minutes	—	3 kHz
3	10 minutes	Color bar	1 kHz
4	3 minutes	RF sweep	—

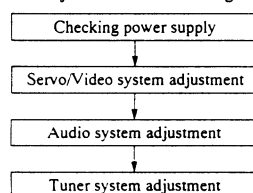
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN	: phono jack
	EURO-AV	: 21-pin (Pin ②) 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio inputs	LINE IN	: phono jacks
	EURO-AV	: 21-Pin (Pin ② and ③) 47 k Ω , - 7.5 dBs (0 dBs = 0.775 Vrms) More than 10 k Ω , - 4 dBs
Video outputs	LINE OUT	: phono jack
	EURO-AV	: 21-pin (Pin ③) 1 Vp-p, 75 Ω , unbalanced, sync negative
Audio outputs	LINE OUT	: phono jacks
	EURO-AV	: 21-Pin (Pin ① and ③) - 7.5 dBs at load impedance 47 k Ω
		Output impedance : less than 10 k Ω
		EURO-AV : 21-Pin (Pin ① and ③) Output impedance : less than 1 k Ω - 4 dBs with 10 k Ω load

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY CHECK (PT-96 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
UNSW 5.0 V check	
Measurement Point	Pin ④ of CN401
Specified Value	5.3 $\pm$ 0.2 Vdc
MTR 12 V check	
Measurement Point	Pin ⑤ of CN402
Specified Value	12.4 $\pm$ 0.5 Vdc
DC 42 V check	
Measurement Point	C187 $\oplus$ side
Specified Value	42.0 $\pm$ 3.0 Vdc
UNSW - 8 V check	
Measurement Point	Pin ⑨ of CN401
Specified Value	- 9.1 $\pm$ 0.8 Vdc
AN 12 V check	
Measurement Point	Pin ⑧ of CN401
Specified Value	12.0 $\pm$ 0.3 Vdc
SW 9 V check	
Measurement Point	Pin ⑤ of CN401
Specified Value	9.0 $\pm$ 0.3 Vdc

Checking Method:

- 1) Confirm that each voltage meets its specified value.

2-3. SERVO/VIDEO SYSTEM ADJUSTMENTS

NOTE ON REPAIRING RV-33 BOARD

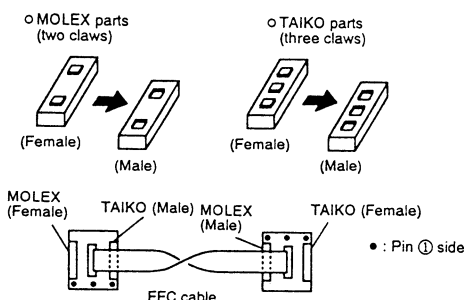
[Servicing Jig]

MA-181 $\leftrightarrow$ RV-33 Extension cable.

⑧ 14 pins (J-6090-044-A) CN303 $\leftrightarrow$ CN001

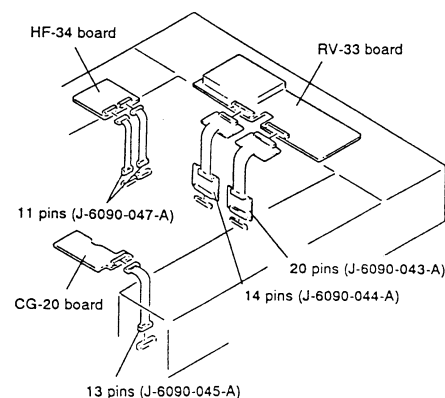
⑨ 20 pins (J-6090-043-A) CN304 $\leftrightarrow$ CN002

- ① There are two types of the connectors between MA-181 and RV-33 boards according to the manufacturing companies (TAIKO or MOLEX). They are not interchangeable.
- ② Servicing jigs are for common use. When using it, please be sure to confirm the form of connectors.



EXTENSION CABLE USING LOCATION

(See page 7-1 for details of extension cables.)



2-3-1. Switching Position Adjustment (MA-181 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.

Improve the interchangeability with other tapes and sets.

When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape
Measurement Point	CH1: CJ701 VIDEO LINE OUT (IO-50 board) CH2: Pin ② of CN304 (RF SWP)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202
Specified Value	6.5 $\pm$ 0.5 H (416 $\pm$ 32 μ sec)

Adjusting Method:

- 1) Adjust the tracking position to the center by pushing tracking buttons $\blacktriangle$, $\blacktriangledown$ (on remote commander).
- 2) Check that switching position is 6.5 $\pm$ 0.5 H. (416 $\pm$ 32 μ sec)
If not meet the specified value, turn RV202 and repeat steps 1) to 2).

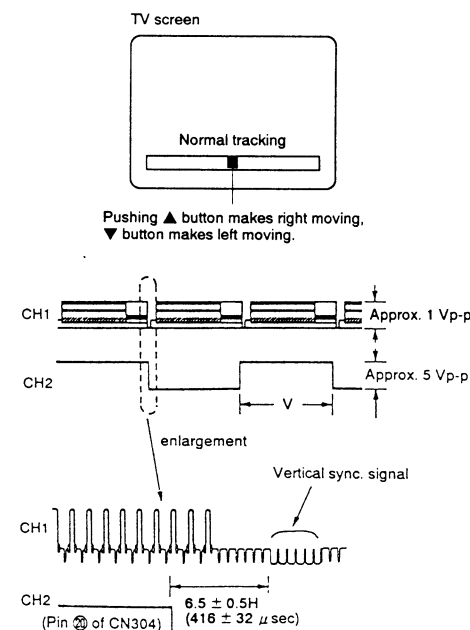


Fig. 7-2-4.

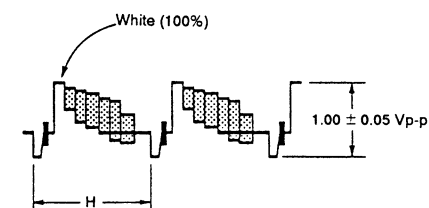
2-3-2. Sync AGC Adjustment (RV-33 Board)

Mode	E-E
Signal	Color bar
Measurement Point	CJ701 VIDEO LINE OUT (IO-50 board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV001
Specified Value	1.00 $\pm$ 0.05 Vp-p

Note : VIDEO LINE OUT terminal must be terminates at 75 Ω .

Adjusting Method:

- 1) With RV001, adjust the VIDEO signal level to 1.00 $\pm$ 0.05 Vp-p



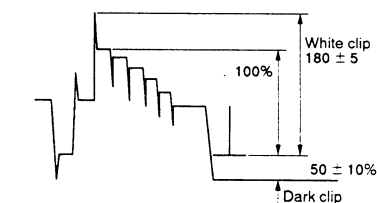
2-3-3. White Clip Adjustment (RV-33 Board)

Purpose:

Adjust the frequency of FM modulated YFM signal doesn't go too high.

When it is out of order, white goes flat and black is over-modulated.

Signal	Color bar
Measurement Point	Pin ⑤ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV004
Specified Value	White clip : 180 $\pm$ 5% Dark clip : 50 $\pm$ 10%



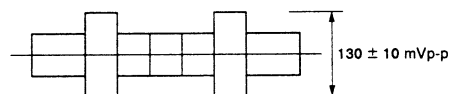
2-3-4. Recording Chroma Adjustment (RV-33 Board)

Purpose:

Adjust recording chroma level.

When it is out of order, S:N ratio of color goes bad, the picture is not colored and second sequence beat appears.

Mode	E-E
Signal	Color bar
Measurement Point	Q013 Emitter
Measuring Instrument	Oscilloscope
Adjusting Element	RV009
Specified Value	130 ± 10 mVp-p



Reference:

Adjusting level is low: Bad color S/N ratio, not colored.

Adjusting level is high: Second sequence beat (squared noise) appears.

2-3-5. Playback Level Adjustment (RV-33 Board)

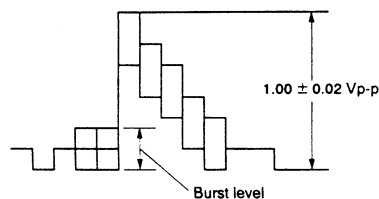
Purpose:

Adjust playback video signal level to the specification.

When it is out of order, the picture is darkened or brightened on TV screen. White goes flat.

Mode	Playback
Signal	Color bar or alignment tape
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV003
Specified Value	1.0 ± 0.02 Vp-p

Note : Video Output terminal must be terminated at 75Ω.



Reference:

Adjusting level is low: The picture is darkened on TV screen.

Adjusting level is high: The picture is brightened on TV screen. White goes flat.

2-3-6. Carrier Deviation Adjustment (RV-33 Board)

Purpose:

Adjust FM modulating frequency for signal.

When it is out of order, black and white are over-modulated, interchangeability is lack, the screen is darkened or brightened or off.

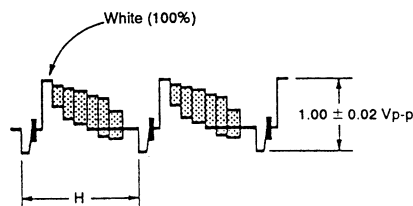
This adjustment should be done after checking 2-3-5. Playback Level Adjustment is satisfied.

Carrier Set	
Mode	E-E
Signal	None
Measurement Point	Emitter of Q034
Measuring Instrument	Frequency Counter
Adjusting Element	RV006
Specified Value	3.80 ± 0.05 MHz
Deviation	
Mode	REC. PB
Signal	Color bar
Measurement Point	VIDEO LINE OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV005
Specified Value	1.00 ± 0.02 Vp-p

Note : Video Output terminal must be terminated at 75Ω.

Adjusting Method:

- 1) Set to E-E mode in the no signal condition.
- 2) Connect frequency counter to emitter of Q034, and adjust with RV006 so that the reading on frequency counter goes 3.80 ± 0.05 MHz.
- 3) Feed the color bar signal and record it.
- 4) Playback the recorded signal and check the signal at VIDEO LINE OUT goes 1.00 ± 0.02 Vp-p with oscilloscope.
- 5) When it is out of order, adjust RV005.
- 6) Repeat items 3) and 5) until the specification is satisfied.



2-3-7. VCO Adjustment (RV-33 Board)

Purpose:

Adjust to lock the color surely.

When it is out of order, the picture doesn't colored.

Mode	PB
Signal	Color bar
Measurement Point	Pin ⑤ of IC001
Measuring Instrument	Digital voltmeter
Adjusting Element	T001
Specified Value	2.5 ± 0.1 Vdc

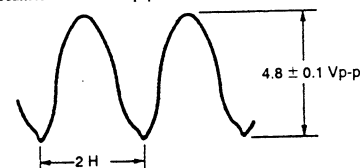
2-3-8. SECAM Discrimination Adjustment

(RV-33 Board) (SLV-E70B/VP: ME SECAM only)

Mode	E-E
Signal	SECAM Color bar
Measurement Point	Pin ⑩ of IC201
Measuring Instrument	oscilloscope
Adjusting Element	RV201
Specified Value	4.8 ± 0.1 Vp-p

Adjusting Method:

- 1) Adjust RV201 so that the amplitude of 1/2 fh waveform becomes 4.8 ± 0.1 Vp-p.



2-4. AUDIO SYSTEM ADJUSTMENTS

- Adjust both Lch and Rch.

[Connection]

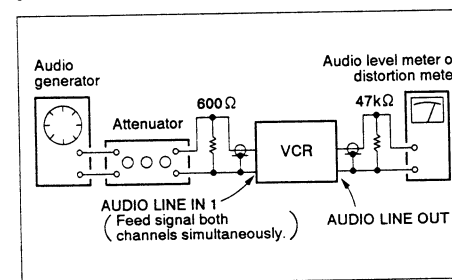


Fig. 7-2-5.

2-4-1. Hi-Fi Audio System Adjustment

- Set switches and knobs to the following positions to make adjustment unless otherwise specified.

INPUT SELECT switch LINE 1
AUDIO MONITOR STEREO

[Adjusting Sequence]

1. VCO f₀ adjustment
2. Deviation check
3. BPF f₀ adjustment
4. AF switching position

1. VCO f₀ Adjustment (HF-34 Board)

Purpose:

Adjust to have interchangeability in HiFi audio.

When it is out of order, the sound is distorted.

Mode	REC
Signal	No signal
Measuring Instrument	Frequency counter
1.4 MHz Adjustment	
Measurement Point	Pin ⑩ of IC101
Adjusting Element	RV103 (R CH)
Specified Value	$1.4 \text{ MHz} \pm 1 \text{ kHz}$
1.8 MHz Adjustment	
Measurement Point	Pin ⑩ of IC101
Adjusting Element	RV102 (R CH)
Specified Value	$1.8 \text{ MHz} \pm 1 \text{ kHz}$

Note: Connect the frequency counter through a probe of high input impedance (more than 1 MΩ) and low capacity (10 pF or less).

Adjusting Method:

- 1) Connect the frequency counter to each measurement point.
- 2) Adjust each volume so that each frequency meets its specified value.

2. Deviation Check (HF-34 Board)

Purpose:

Set the HiFi audio signal level to specified value.

Adjust to have interchangeability with other tapes and sets.

When it is out of order, the volume of sound is different on playback.

Mode	REC
Signal	Pins ①, ③ 400 Hz - 12 dBs
Measurement Point	IC101 L CH Pin ⑩ R CH Pin ⑩
Measurement Equipment	Frequency counter
Specified Value	$50 \pm 5 \text{ kHz}$

3. BPF fo Adjustment (HF-34 Board)

Purpose:

Adjust to separate carrier component precisely and to operate normally the filter for cutting video signal.

When it is out of order, the sound is distorted.

Mode	PB
Signal	1.608 MHz Input 200 mVp-p : Pin ① of CN103
Measurement Point	Pin ③ of IC101 Pin ⑤ of IC101
Measuring Instrument	Oscilloscope
Adjusting Element	RV101

Connection:

- 1) Remove HF-34 board from CN103, and feed 1.608 MHz, 200 mVp-p sine wave to Pin ① of CN103.

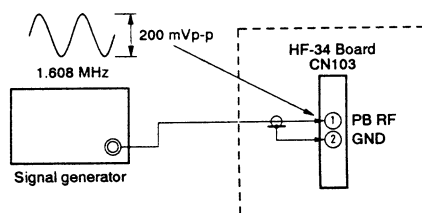


Fig. 7-2-6.

Adjusting method:

- 1) Turn RV101 counterclockwise seen from the component side.
- 2) Turn RV101 clockwise gradually and stop turning when the level A becomes equal to the level B.

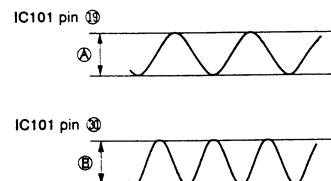


Fig. 7-2-7.

4. AF Switching Position Adjustment (MA-181 Board)

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets. When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape
Measurement Point	CH1: See Fig. 7-2-8 (HF-34 Board) CH2: Pin ③ of CN802 (RV-33 Board)
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	Fig. 7-2-9

Measure between the big land and the small land near the both sides of CN103 on the component side of HF-34 board.

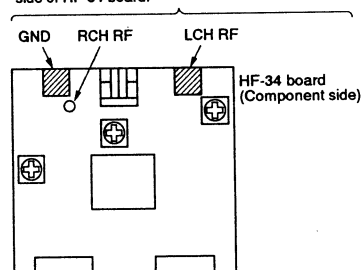


Fig. 7-2-8.

Adjusting method:

- 1) Adjust the tracking position to the center by pushing tracking buttons ▲, ▼ (on remote commander). (Auto tracking: OFF)
- 2) Adjust RV201 to minimize dropout.

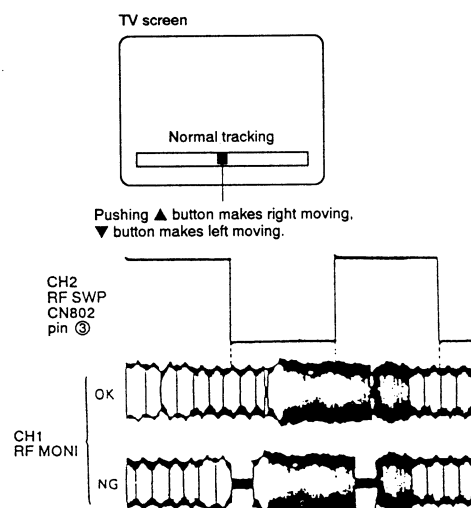


Fig. 7-2-9.

2-4-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified.
- Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT II.

2. Recording Bias Adjustment (MA-181 Board)

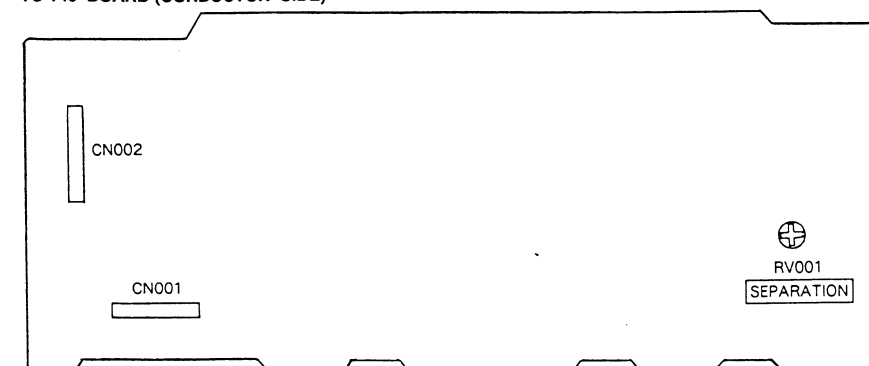
Mode	REC and PB
Signal	400 Hz, - 30 dBs 7 kHz, - 60 dBs
Measurement Point	AUDIO LINE OUT L or R
Measuring Instrument	Audio level meter
Adjusting Element	RV851
Specified Value	0 ± 1 dB

Adjusting Method:

- 1) Supply a signal of 400Hz, - 30 dBs to Audio Line Input.
- 2) Connect the audio level meter to the Audio Line Output.
- 3) Adjust the attenuator so that the audio level meter will indicate - 30 dBs.
- 4) Make recording in the SP mode.
- 5) Set an audio line input signal to 7 kHz and make recording.
- 6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
- 7) Confirm that the 7 kHz playback output levels within a range of the 400 Hz playback output level 0 ± 1 dB. When beyond this range, adjust RV851 and repeat the steps 1) through 7) above.

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

TU-146 BOARD (CONDUCTOR SIDE)



2-5. TUNER SYSTEM ADJUSTMENT

2-5-1. Receive Separation Adjustment

(E70ES/NC: TU-146 Board)

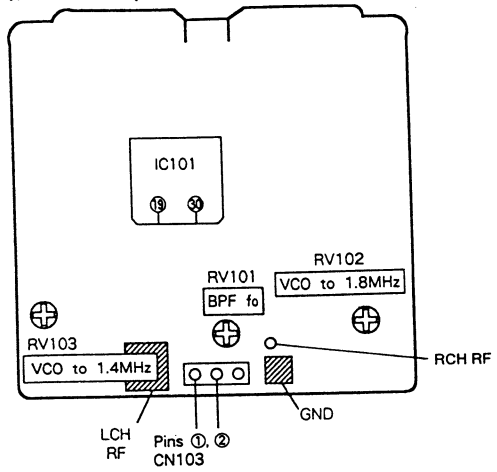
(E70AP/IT/VP/VP: MESECAM: PT-96 Board)

Signal	Stereo Lch: No modulation Rch: 1 kHz Modulation: 100%
Connection Point	AUDIO LINE OUT L
Measuring Instrument	Oscilloscope
Adjusting Element	RV001 (TU-146 board) RV871 (PT-96 board)

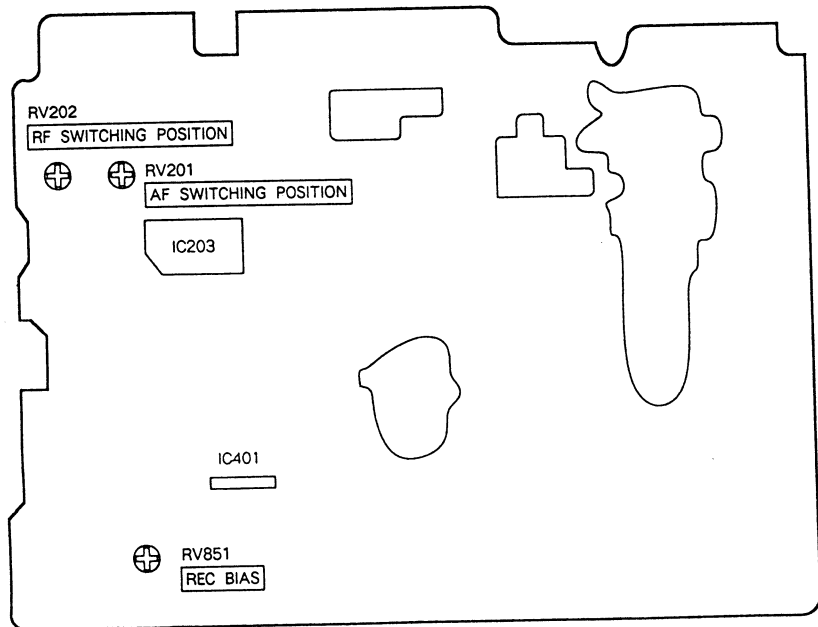
Adjusting method:

- 1) Set the sound multiplex signal generator in the Stereo mode, and set Lch to 400 Hz and Rch to 1 kHz, 100% modulation.
- 2) Connect the oscilloscope to the Lch of Audio Line Output.
- 3) Adjust RV001 (RV871) to minimize Rch (1 kHz) output. When this is done, do not fully turn RV001 (RV871). (The "STEREO" indication must be illuminated.)

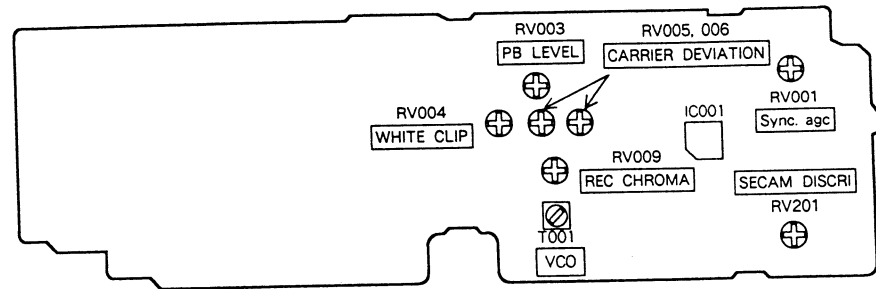
HF-34 BOARD (COMPONENT SIDE)



MA-181 BOARD (CONDUCTOR SIDE)



RV-33 BOARD (COMPONENT SIDE)



PT-96 BOARD (CONDUCTOR SIDE)

